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PREFATORY.

The contract for the printing, binding and distribution of the Transactions for 1906 was let to Wm. B. Burford, Printer and Binder, Indianapolis, in June, at the same favorable terms as in the two preceding years.

All the papers left with the Secretary or sent to the Editor are presented in this volume. The paper of Dr. T. B. Noble on "The Relation of Cholelithiasis to Fat Necrosis" was lost and the writer was unable to reproduce it. By ruling of the President, the Committee on Publication was directed to print all the papers presented in the program, whether read or not. Several of the papers were not left with or sent to the committee and therefore do not appear in the book.

The reports of several of the committees rise to the dignity of important papers and are presented in full—that of Dr. John N. Hurty on State Medicine; Geo. R. Green, for the Committee on Inebriety; Theodore Potter, for the Committee on Tuberculosis; Lafayette Page, for the Committee on Education. These reports follow the stated scientific papers, and with them constitute a volume of about the same size as that of 1905.

The Editor is pleased to note that the papers were all typewritten and in excellent form for publication. Most of them exceeded the limit of length set by the Association, but the high quality of the matters presented may be sufficient warrant for this appropriation of privilege on the part of the writers.

The Editor, with the consent of the Association, has added the excellent historical paper by Dr. Hubbard M. Smith, of Vincennes, upon "Medicine in the Northwest," as it shows the formation of the first medical society in Indiana.

The Editor thinks this volume shows progress in medicine and medical education in Indiana, and he bases this belief upon an intimate knowledge of the Association for twenty-five years and

his work as Editor of the Transactions for fifteen years. While the labor of editing the book is somewhat of the nature of routine, it is still not without dignity and beneficence, and he is of the opinion that no State monthly journal can or should take the place of the annual bound volume of the Transactions, and in that he is confirmed by the opinions of those who, in the various States, have tried both methods, and also by the opinions of eminent librarians and conservators of medical literature.

The Editor desires to express his thanks to Dr. F. C. Heath, the Secretary of the Association; to Dr. A. E. Bulson, Jr., the Treasurer; to Dr. Geo. H. Grant, the President, and to Dr. J. G. Nehrbas, Chairman of the Committee on Arrangements, and to Mr. Benjamin Cook, in charge of the printing, for advice and assistance in the issuing of the Transactions.

A. W. B.

BOSTON MEDICAL
JAN 17 1907
LIBRARY

MEDICAL EDUCATION AND MEDICAL PROGRESS.

GEORGE H. GRANT, M. D., RICHMOND, INDIANA.

Presidential address delivered before the Indiana State Medical Society, 1906.

Medical education has a traditional history as old as the earliest record of the thoughts and acts of men. Fragmentary, disconnected, valueless except as ethnological curiosities as these records are, they are found the world over, in the hieroglyphics of the Egyptian pyramids, in Babylonian and Greek inscriptions on ruined temple walls, on Aztec altars, and in the sign writings of savages.

In this dim voiceless past the healing art in every quarter of the globe was a part of the mysticism of the priesthoods, having no existence as a separate profession. Knowledge of the charms and incantations, as well as of material remedies and surgical procedures, was revealed in great secrecy by the aged priests to the novice who had proven his worthiness to receive the holy mysteries, or was imparted by fathers to their sons so that certain families would control one entire specialty. But wherever civilization advanced, the mysteries and incantations were gradually worn away by the attrition of common sense. While the practices remaining were crude, very often dangerous, and almost invariably based on illogical premises, due to a lack of anatomical and physiological information, they had the merit of being reasoned out from the total of knowledge then at hand, minus the mysticism which was the foundation of the priestly system.

But medicine became a pursuit *per se* with Hippocrates, one of the greatest teachers the world ever knew; so great, indeed, that for centuries his writings inspired all medical literature, and his teachings sufficed for a changeless system of practice.

And with the brilliant Galenus, skilled anatomist, able surgeon, and careful generalizer, the profession lost many of its

remaining errors, and took on a fundamental nature which may fairly be called philosophy. Seven hundred years after the death of Galenus, the Persian sage, Avicenna wrote his "Canon of Medicine," based on the systems of Hippocrates and Galenus, and in the far east the Canon is today revered and followed. Influenced by various causes, perhaps by personal selection or through the eloquence of some teacher, or on account of the traditions of a school of medical philosophy, the systems of Hippocrates and Galenus had equally their partisans throughout the civilized world. And so the profession was divided and remained content to quarrel through the intellectual gloom of the Dark Ages, blindly following the one or the other master mind with no application of personal observation, and bitterly denouncing in ponderous Latin theses the adherents of the other school.

But a period of mental unrest, of awakening and illumination came. Columbus sailed away and came back with a golden empire for mighty Spain, and the sails of the Argonauts of every nation caught the westering winds. Civilization's horizons had infinitely broadened. The little black friar of Erfurt had nailed his defiance to Rome on the doors of Wittenberg's town hall and had set in motion the mighty Reformation.

Throughout all this turmoil of political, commercial, and religious upheaval, medicine as well shared in the world movement. A Swiss chemist, surnamed Bombastus, had a son who had taken up the study of medicine. By an odd combination of his various names, converted into Greek and Latin, he became known as Paracelsus. Never did a son deserve a father's patronymic as did he. Through the assistance of a powerful friend he had the fortune early in his professional life to deliver a course of medical lectures at Basel.

At the very outset of his career he betrayed his ill-balanced methods which so soon resulted in his downfall. On the occasion of his first lecture he ostentatiously burned the almost sacred works of Hippocrates and Galenus and introduced a system of medical and surgical works of his own, which, he announced, contained the entire scientific information in all branches of these arts. But

"he was one of the first physicians to profit by a mode of study which is now reckoned as indispensable. * * * He broke away from tradition and delivered his lectures in German, not in Latin. They were expositions of his own experiences, his own views, his own methods of curing, adapted to the diseases that afflicted the Germans in the same year, and they were not commentaries of the text of Galenus or Avicenna." On account of this departure from the time-honored method of lecturing in Greek or Latin, and because of his introduction of his own personal method, and doubtless, too, because of his successes, he was denounced, despised, and finally killed by his professional enemies. The special value of Paracelsus' work, in addition to having contributed some minerals to the pharmacopœia, was in teaching the application of an individual treatment to each case, based on its particular study, and not merely following the unvarying dicta of an antiquated philosophy. The unfavorable opinion of Paracelsus usually held by historians was not shared by Robert Browning. He idealized Paracelsus, making his life and work typify renunciation. Less boastful are the noble lines in which Browning makes him say, "I profess no other share in the selection of my lot than this my ready answer to the will of God, who summons me to be his organ, and appoints no less the way to praise than the desire to praise, and such praise is best attained when man attains the greater welfare of his kind."

Gradually through the years that stretched out into centuries, the idea of personal research and observation permeated and directed medical instruction. Through this developmental period that comes down to this very day, standing out like great sun-illumed headlands above the foggy levels of mediocrity and non-achievement, are such names as Paré, Sylvius, Harvey, Morton, Lister, Pasteur, Koch. These and others that time prevents naming have put the solid foundations under medical education of today.

In a comparatively young nation like ours the opportunities for college education, as preliminary to the medical course, were, until the last few decades, either not considered or obtained with great difficulty. For many years medical educators in the United

States felt the humiliation of the unfavorable estimate in which their student bodies were held abroad. Within our own borders the older, wealthier, and better organized institutions of the Eastern States discredited medical graduates from the West or South. This discrimination was not due to a spirit of Phariseeism or aloofness as much as to a proper enough comparison of the preliminary educational requirements, plus the thoroughness of the course in medicine existing in the older and in the newer institutions. No more helpful thing could possibly have happened to the obscure little Western school than the realization by its faculty of the entire propriety of this attitude of the powerful colleges, for a certain percentage of the teachers in these small schools were graduates of the greater institutions, and therefore they earnestly labored to elevate the standard and strove to equalize the premedical as well as the medical requirements in the East and the West.

Almost every medical man here has seen the fruit of these efforts, first in a more comprehensive medical course of two years in college and a year with the preceptor, then added entrance requirements and three years in college, and finally four full years in college with a preliminary education equal to that of a high school as a minimum requirement of every matriculant for a medical degree, as is the case in Harvard and Johns Hopkins.

While at present the Indiana State Board of Medical Examination and Registration does not require a college degree from matriculants, it is a matter of pride to note that our State is one of six that requires a preliminary examination over work equivalent to that of a four years' commissioned Indiana high school of all matriculants who have not a high school diploma. The board announces a considerable diminution in the number of prospective medical students, an abundant evidence that the student body and graduates are of a greatly improved character.

But the most important work of the board has been on behalf of interstate reciprocity. Aided by Michigan and Wisconsin, Indiana has done more in this matter than all the licensing boards of the United States combined. In his farewell address to the pro-

fession in the United States, Dr. Osler said: "In this country reciprocity between the State licensing boards remains one of the most urgent local needs. Given similar requirements and examinations, practically of the same character with evidence of good reputation, the State Board should be given power to register a man on payment of the usual fee. It is preposterous to restrict in his own country, as is now done, a physician's liberty. * * * I would urge you all most strongly to aid the movement now in progress to place reciprocity on its proper basis."

This board has done excellent work, when the difficulties they have encountered are considered, in ridding the State of quacks and illegal practitioners. First and worst of these difficulties is the jury. Acquittals in the most flagrant violations of the law are obtained through the sympathy of the unthinking laity for what they consider persecution. But lack of funds, weak spots in the statute, and apathy on the part of the profession are among the other obstacles that hamper their work. Better men because of their superior mental training are studying by better methods a far better system of medicine, and if the result be not better practitioners, the fault must lie with the student.

The possession of a degree and a license to practice medicine does not justify the graduate in believing that his medical education is complete. At his earliest opportunity he should join the County Medical Society and take an interest in the district and State medical associations. Society work of this kind will broaden a man by bringing him in contact with older practitioners, hearing and discussing their views, and acquiring a more frendly relation with these brothers in medicine. In effect, the work of these societies will be to him an actual post-graduate school.

The past year has been one of the most important in medical affairs in the history of this association. The establishment of the Epileptic Colony at New Castle, in the first place, is a great philanthropic as well as professional advance. The commission in charge has wisely purchased a highly cultivated tract of land, although by doing so their appropriation was so drawn upon that but two buildings can be erected at present. However, this will

enable the institution to begin its beneficent work with seventy-five inmates next autumn. As rapidly as possible the colony will be enlarged to accommodate 1,500 persons, now, unhappily, dwelling in jails and infirmaries.

Next, the Laboratory of Hygiene has started on its successful labors. This institution has a double function. For the general public it stands between them and impure and unwholesome food, and provides the possibility of pure water. For the profession it will secure reliable drugs, assist in obtaining an absolutely accurate diagnosis in suspected cases of fever or tuberculosis, and within a few hours furnish positive knowledge as to whether a given case is tonsillitis or diphtheria. In addition to these material advantages there accrues to those who are remote from institutions devoted to scientific medical work that feeling of satisfaction which results from the possession of the same laboratory advantages, which until now have been the privilege of city practitioners only. The stimulation to do better work must result in an added dignity to our ministrations, thus removed from dubiety and placed on the level of true scientific labor.

The prestige of medicine in Indiana has been greatly advanced by this acquisition. Since this association proposed, and by its corporate influence, as well as by the individual efforts of its members, has secured the enactment of most of the health laws of the State, and since this interest has continued and thereby assisted in the enforcement of these acts, it is proper that the achievement of public health work be reviewed. Complete mortality statistics have been collected over the entire State since 1899, and these are tabulated and scientifically analyzed. The excellence of these compilations has resulted in their being sought by libraries all over the Union, and by many foreign governments, and the future issues have been requested for all these institutions.

The people are constantly advised in sanitary matters, the authorities are aided by pertinent suggestions, school children are daily examined by simple methods, as to sore throat, eruptions, etc., and in many counties the sight and hearing of the pupils are now as carefully tested as is their mental status.

In 1905 Indiana's death rate decreased 0.3, as compared with that of the last six years, a net saving in lives of over 700 per annum. In 1904 there were 4,948 deaths from tuberculosis in Indiana, and in 1905, 4,492 deaths, a decrease of 356, or nearly one life a day saved.

Although this question is to receive your attention in the symposium on tuberculosis, the opportunity to urge united and individual effort in securing the enactment by the next Legislature of a statute providing for a sanatorium for the treatment of tuberculosis can not be passed; we must urge the commission appointed to investigate the question to report with a recommendation that this great work be at once instituted, and that a sum of not less than $150,000 be appropriated to inaugurate the work.

Typhoid fever killed 1,013 citizens in 1904, and 928 in 1905. None should have died, but hundreds escaped the disease through the tireless crusade of our members for purer water, purer food, and more sanitary homes.

A discouraging item appears, however, when it is shown that 178 mothers perished from puerperal infection last year, an increase of eight over the year before, but the large number of accouchements either unattended or, worse, attended by ignorant midwives, may clear us of some of this disgrace. Yet the dirty-fingered doctor still exists, and is most often met with in the city.

There is a grim significance in the mortality of cancer, which claimed 1,159 victims in 1904, and 1,425 in 1905, an increase of over 6 per cent. Fifty-three citizens in every 100,000 of our population died of cancer. While this disease has had longer and closer study than any other of the great assassins of humanity, it is apparently increasing in all parts of the world. I say apparently, for the conclusion is deduced from statistics, necessarily imperfect and without regard to the irregular increase of population. However, even though the returns are faulty, and not the proper basis for the support of a theory (for instance, that of contagion or heredity, or of the existence of a cancer parasite), more deaths are known to occur each year wherever records can be obtained. It is a familiar saying among pathologists that the discovery of the real

cause of cancer, or that which is more vitally of interest, of some biological, or other method of curing it, is quite as likely to occur in a small, obscure laboratory as in the perfectly equipped pathological department of a great university.

But by far the most important event that has occurred in the State in the last year, with which the medical profession is concerned, is the union of all the medical colleges in the State, as the Medical Department of Purdue University. In discussing the progress of medical education, Dr. Osler (if I may be again permitted to quote from his great farewell address) said: "The urgent need is a consolidation of our medical schools. Not only in this city, but in Richmond, in Nashville, in Columbus, in Indianapolis, and in many other cities, a merger is needed. Even the larger schools of the larger cities could pool their scientific interests to the great advantage of the profession."

In briefly reviewing the world's medical progress in the past year, some noteworthy work is observed, and no subject in pathology has received closer attention than cancer. The opinion hopefully advanced a few years ago that cancer was certainly of parasitic origin has quite generally been reversed and is no longer entertained, except by a small minority of competent investigators. In the third report of the Carolyn Brewer Croft Cancer Commission of Harvard Medical School details of exhaustive experiments are presented and the conclusion in every instance fails to show the slightest evidence of simple parasitic infection. These experiments were made by pathologists of the highest skill and of unbiased minds, and their deductions are authoritative. The negative results obtained by the members of this commission have, to their minds, left the theory of Cohnheim unshaken. In a review of the year's work on cancer in the *Interstate Medical Journal* for January, 1906, Karl Fisch said: "The reports of the different cancer institutes and laboratories, except that of the New York Institute, are uniform in their conclusions. They have done a great deal to bury finally the parasitic theory based on the presence of cell inclusion." In a personal letter an eminent New York pathologist says: "So far as I have been able to learn, path-

ologists quite generally discredit the work of the Buffalo Laboratory." But the work of the Buffalo group of investigators, even if not accepted, has been very important. The question must be admitted to remain an open one.

In April, 1905, Drs. Schaudin and Hoffmann of Berlin published a report of work which they have done in reviewing the investigations of Dr. Siegel, also of Berlin, on protozoa he had found in luetic lesions. By the aid of very powerful microscopes they detected constantly another very minute organism in these lesions. This organism they called *Spirochæta pallida.* Following their announcement, in the past year over a hundred observers have confirmed the regular presence of this *Spirochæta* in the initial lesion, in buboes, in twelve or more hereditary luetic infants, and in the tissues of various internal organs. In Metchnikoff's experiments with lues in anthropoid apes the organism has been found in four out of six cases.

While at present the demonstration of *Spirochæta pallida* as the single cause of lues is not positively accepted, the constancy of its presence in a luetic during the contagious period of the disease, and its absence in a nonluetic have a significance that merits the most thoughtful attention and expectation that its causative relation may be ultimately proven.

Since the discovery that the malarial parasite was introduced into the blood through the sting of the anopheles mosquito, and that the bacillus of plague was disseminated by rats, the part played by insects and animals in spreading infectious disease has received careful study. The first very important result was that infection through the sting of the stegomyia was the sole cause of epidemics of yellow fever, and, what was of vastly greater benefit to humanity, that the destruction of their breeding places and larvae, and the exclusion of the mosquitoes was an absolutely certain method of checking the disease. In the past year this line of investigation has shown that bed vermin, having bitten a person sick with pneumonia, will infect others by transferring the *Bacillus lanceolatus* through their bite. Also that the lanceolatus, having passed through the respiratory and alimentary systems of the

common mouse, becomes vastly more destructive when reintroduced into the human organisms. These are facts of practical importance, suggesting as they do the abatement of this form of infection through domiciliary cleanliness.

The most valuable contribution to parasitology in the past year was made by Robert Koch. In his "Preliminary Report of an Expedition to East Africa," published in November, 1905, and abstracted in the *Post-Graduate* for January, he gives the most minute account that has yet been written of three diseases intercommunicable between domestic animals and human beings—African recurrent fever, Texas fever, and the sleeping sickness. His observations of the habits of the insect carriers whose bite disseminates these diseases have enabled him to suggest valuable expedients in avoiding these infections. Our own fellow-countrymen, Novy and Vaughan, had already made very valuable contributions to the study of the protozoal diseases. It is research work of this character that must ever command our highest professional respect. Animated by no other interest than a purely scientific one, a scholarly desire to know the cause of these diseases, and without any prospect of gainful advantage, these scientists have spent time and treasure for this end.

Time forbids even a brief consideration of the year's surgical progress. Conservatism is probably its dominant note, and the startling successes attained in nerve, brain and blood-vessel operations indicate that surgery's next triumphs will be in this field.

The ceaseless demands of medical science require a diversity of effort that is infinite. None can shirk his part in the great plan. Some will achieve largely and reap rich harvests of temporal gain or eternal remembrance, but most of us will quitely do our work; our greatest fame the fealty of a few grateful hearts; our recompense a final peace at life's twilight hour. Yet each of us may profit in that larger sense which, recognizing worth in another, seeks honorably to emulate his efforts by producing better results in our own chosen labors; and while in our ethical relations we do well to affirm our abiding veneration for the oath and gentle admonitions of Hippocrates, let us take heart at the memory of the

struggles that our patron of independent thought endured, with a mantle of charity for his faults and a grateful recognition of his lesson of personal research.

In his beautiful word-picture of the passing of Paracelsus, Browning says: "Meanwhile I had done well; tho' not all well. As yet men can not do without contempt. 'Tis for them, good, and therefore fit awhile that they reject the weak, and scorn the false, rather than praise the strong and true in me. But after they will know me. I press God's lamp close to my breast. Its splendor soon or late will pierce the gloom. I shall emerge one day."

THE GROWTH OF THE COMMERCIAL SPIRIT IN MEDICINE.

BY DR. FRANCIS S. WATSON, OF BOSTON.

An address delivered by invitation of the Indiana State Medical Association at its annual meeting in Winona, Indiana, May 23, 1906.

Mr. President and Gentlemen:

Permit me to thank you for the pleasure I have in meeting the members of your Association and to express my sense of appreciation of the high honor conferred by you in asking me to address you here tonight.

I have taken this occasion to bring forward the subject of which I am to speak because of its being one of much importance to the welfare of the profession and because this is the first opportunity I have had for doing so. I am particularly glad that it should be offered by your Association, because its influence is far-reaching and I hope to have that influence to give to what I say an importance and effect which it could not have otherwise.

The responsibilities imposed by the Civil War upon the men of the last generation of this country were met by them with readiness to sacrifice life and all else for the sake of maintaining principles which they believed to be right, and thus stamped that generation as one conspicuous for its service to ideals.

While the war lasted, the material development of the country was necessarily neglected in many directions; when it was over, the energies of our people turned to commercial enterprises, which were carried to successful fruition with characteristic speed.

This concentration of the attention upon the material elements of life and the almost unexampled era of prosperity that resulted, have brought to us of this generation many benefits. They have also brought some of the evils that are inevitable attendants upon

the rapid acquisition of great riches, one of the most notable of which has been the making of money the chief, and in many instances the sole end and object of endeavor. Together with this has come a growing indifference as to how money is made and the substitution of a lower standard of commercial honor in the place of that which previously prevailed. Under these influences our ideals have not indeed been killed, but have become obscured.

These things have been especially noticeable in the worlds of finance and of politics. The extent to which they have been invaded by them has been made clear by the recent revelations of fraud, cupidity and abuse of trust on the part of some who held positions of such honor as should have justified the belief that they were above suspicion.

There are two professions which might confidently be expected to withstand the influences of which I have just spoken. They are those of the Church and Medicine. In the case of one of them—our own—evidence shows that it is in danger of not fulfilling this expectation. I have been reluctant to admit this, and have done so only upon being forced to accept it as true because of examples which have come to my knowledge in my own community.

The belief that many of the profession do not recognize the existence of the evil, that others fail to appreciate the menace to our welfare involved in it, or the importance of combating it, determined me to make the present protest against this sort of commercialism among us and against the tolerance with which it is too often treated by some of the members of our body.

There are, of course, dishonest men in all walks of life, but in our profession the men composing its reputable body have outlawed them, not harbored or remained indifferent to their presence in its ranks. In so doing we have warned the public of the true nature of such persons and that they form no part of us. The profession therefore has not suffered discredit because of the existence of this class of individuals. What I have to say is not directed to them, but to those of our own members who have become infected by the commercial spirit of the day and have been

so dominated by it as to allow themselves to adopt dishonest methods in their dealings and who are unable to discriminate between honesty and dishonesty.

It is far from being a grateful task to speak of these things, but it is time that some one of our own number should do so, and little important by whose voice it is done, for the matter is one that speaks too strongly for itself to make that of consequence; and so I have taken it upon myself to give expression to the protest against them.

I am aware that there are some who are unwilling to frankly face facts of this kind and who blind themselves to their existence, and that there are others who, governed by timidity, fear the effect of such disclosures upon the public mind. I would ask such as these if they think that the effect upon the public of disclosures coming from sources outside the profession will be less unfortunate than if made from within it? and there are not lacking signs that this may well happen.

Only when people accept dishonest practices as a necessary part of living, and manifest their acceptance of them by their apathy and silence, do they become a serious danger. Their exposure and eradication are the signs of health and vigor and the promise of future soundness. Silence, therefore, not disclosure, is what we have to fear.

None of us would willingly dwell longer than need be upon specific cases of dishonorable transactions in our own profession. I may be excused, therefore, I think, if I adduce only just enough of them to substantiate what I have said of their existence and to illustrate certain forms of them, to one of which I wish particularly to draw attention.

The following incident, which is one of a number of similar ones that have come to my notice, exemplifies one of the phases of the commercial spirit:

Not long since I happened to hear a discussion in which some influential physicians took part concerning the appointment of a certain gentleman to an important position as a teacher in an important medical institution. In the course of the talk it was

universally conceded that his qualifications with respect to learning, character, ability as a teacher and as a practical administrator were such as to peculiarly fit him for the post. Then came this objection: "Yes, that is all quite true; what a pity it is that he has not a large paying practice! for no one who has not got one should be appointed to that position."

The significant feature of such views as these is of course that there are men of influence and high in the ranks of the profession who measure fitness for office in an institution of learning by the standard of money-getting ability rather than by that of high qualification and of devoted service to the advancement of teaching without regard to personal remuneration and who even allow the latter fact to constitute an obstacle to the promotion of a candidate for office. This was the fact, however, in this instance, for the failure of the physician in question to obtain a large paying practice was mainly due to his devotion to the interests of the very institution in which was the place for which he was a candidate and to which he had given his service to his own pecuniary disadvantage.

The special form of dishonest dealing to which I wish to call attention is that which passes under the name of "dividing the surgeon's operation fee," or paying a commission by the surgeon to the family physician for bringing patients requiring operation to him, but which is, when called by its right name, the giving and taking of a bribe.

This appears to be a growing custom and of comparatively recent origin. The two following incidents are examples of it:

A country practitioner brought a woman with an ovarian tumor to a well-known surgeon, who is a friend of mine, and who told me of the occurrence. Operation was advised, but before the details were arranged for its performance the family doctor asked what the surgeon's custom was with regard to paying the attending physician a commission in such cases. The surgeon told him that this was not his custom and that he had no intention of making it so. The other doctor then said that under the circumstances he preferred to take his patient elsewhere. This he

did. He met with a similar refusal from the next surgeon to whom he applied, but a third one readily agreed to his proposal and with him the patient was left. I was told that this last surgeon was a member of the staff of one of our best hospitals.

The other case was told to me by a general practitioner who is also a friend of mine. He took a patient with a uterine fibroid to a surgeon of prominence. Here, as in the last case, operation was advised. Before the doctor went from the surgeon's office, the latter said to him, "I will send you $300, doctor, when the patient settles her account with me." My friend asked why this should be done, and the reply was: "Why, you have sent me a good case and I think you should get at least as much as that out of it for having done so."

I have heard this custom defended by some members of the profession, especially by some of the younger ones, as being perfectly legitimate and proper.

The knowledge of such cases as those which I have mentioned came to me quite accidentally. Some of my friends have told me of other examples of this practice which they have known. It is not probable, therefore, that those of which I have been informed are more than a small part of the whole number.

Were it not for the failure on the part of those who defend this custom to understand that it is dishonest and why it is so, it would be superfluous to explain a matter seemingly so obvious. As it is, I may be excused for doing so.

The dishonest feature of the transaction, so far as the surgeon is concerned, lies in the fact of his giving a bribe to his fellow-practitioner and in cheating the patient by adding to his fee for the operation the amount of that bribe. Needless to say that this does not appear as an item in the accounts of either physician or surgeon.

The bad feature of the matter for the family physician lies in the temptation to which he will inevitably yield sooner or later, to persuade himself that the surgeon who pays the largest commissions is as good or better than others who pay none or who pay smaller ones.

Finally there is the fact that the practice of the surgeon does not depend upon his skill as an operator, his soundness of judgment or his experience, but upon the bribes he pays to his fellows to turn their operative cases over to him.

It would be difficult to find among the men who employ this method one who would fail to appreciate—at any rate in his own case—the dishonesty of a custom, said to be prevalent, which is that of the giving of commissions by horse dealers to coachmen on condition that they succeed in persuading their employers to buy horses of them. The employer, without knowing it, pays, of course, the amount of this commission in addition to the price of the horse.

Such a transaction differs from that of the surgeon which I have described only in one respect, which is, that we certainly have the right to expect and to demand a higher standard of honesty of the latter than of the horse dealer.

I have no doubt that there are many honest dealers, but the trade has not a good name. It does not require that there should be many dishonest men in it to give it a bad reputation, nor need there be many dishonest surgeons to bring the same ill repute to us.

Gentlemen, it is but a comparatively short time since—in the year 1745, to be accurate—that in England the surgeons withdraw from the barbers' association which had hitherto represented this branch of our profession and became a distinct body by themselves.

Up to this time, and in some instances a good deal later, surgery was practiced by persons licensed to perform certain special sorts of operations only, and quacks and imposters, instead of being outlawed from the profession as they are today, formed the mass of those who cared for the sick. They practiced their empirical methods as a trade and were intent upon turning the sufferings of others to their own profit. The men of our profession of that time were held in but little esteem and occupied a low place in the social scale, and very properly so. From that unenviable past they have gradually been promoted to the place they

now occupy, than which there is none more honorable or more honored.

This uplifting has been due to two things. The dignity lent to the profession by the share it has taken in the great advance in scientific knowledge and the higher intellectual attainments demanded, in consequence, of those who practice it, and to the finer character of the men who have entered its ranks, to whose steadfast adherence to the best standards of professional conduct we owe more than to all else. It has been in short to the ceasing to practice the profession as a trade and to the assuming of its duties with the spirit demanded of those who embrace a humane mission as a calling. It has been well put by Sir Wm. MacCormac in his address on the occasion of the centenary of the Royal College of Surgeons of England in 1900 who in giving a short sketch of Benjamin Brodie spoke thus of him: "He recognized the great traditions of wisdom, self-denial and benevolence as the everlasting basis on which true medicine and surgery rest." It is to the exhibition of such qualities by the men of our profession that we owe the fact of being regarded by the people we serve with a peculiar respect and affection.

A homely illustration of the way in which people regard us was furnished me not long since by a mechanic whose guild was "on strike." In the course of our talk I asked him, "Have you ever heard of doctors going on strike?"

"Why, no!" said he.

"Well," said I, "what should you say if when you came home tonight you found your child dangerously ill and on going to fetch the doctor to save it you were told by him that he did not do any work after six o'clock or that he wouldn't come unless you paid him a sum that you could not possibly afford to pay, and if you should receive the same reply from all the other doctors to whom you appealed for aid, and then returning to your home you were forced to sit helplessly by and watch your child suffer all night and very likely see it die in the morning?"

"Well, I know," he said, "but then you see doctors are different!"

Yes, doctors are different! We do not go on strike, there is no such thing as working overtime for us, we unhesitatingly leave comforts, face contagion and all the rest of it with which we are all familiar, at all hours, in all seasons, to answer the call of the sick, and we do so equally for the man who lives in a hovel and pays us nothing as for him who dwells in a palace.

These are the things that make us different! This is the birthright that we have inherited from our professional ancestors, and it is one of which we are justly proud. We owe to it all that is worth having of what we are today and the place we occupy.

We are threatened with the loss of these if we continue to countenance dishonest dealings which are in vogue among a small number of our members. Shall we allow them to rob us of it? Assuredly no!

The great mass of the profession is sound and worthily represents the high ideals which we must as a profession serve if we are to retain our self-respect and that of the public for us.

There is no lack of bright examples all about us to assure us that this is true and to give us the fullest faith in the integrity of the profession now and in the future. One of them is in the person of a quiet friend of mine in Boston named Dr. MacCollom. But few are aware of the nature of his service to mankind or stop to consider the self-denial that it requires. He would doubtless say that any one was lucky to have the chance to do what he is doing. This is to be the resident physician in that part of the Boston City Hospital known as "The South Department," which is devoted to the treatment of cases of diphtheria, measles, scarlet fever, erysipelas and some other acute contagious maladies. He devotes himself exclusively to the care of these patients, having no time for practice outside the hospital. Needless to say, he is not too welcome a visitor in the households of the timid, who regard him as a probable carrier of contagion. And so he lives almost entirely within the precincts of the hospital grounds. He is paid for this service three thousand dollars a year. Think what a failure this man's life has been as it would be regarded by those who measure success and failure by the yardsitck of money!

But what a glorious success to us who have inherited a belief in other standards of success.

Another figure comes to mind in this connection—that of one of our number whose promise of a brilliant career was brought to a sudden end by his being stricken with tuberculosis soon after he had entered upon it, and who from the stirring influences of a life filled with interest and with all that was the very breath of life to him was banished, isolated from his fellows and left alone to contemplate what most men would have regarded as a life hopelessly wrecked, but out of which this one built the splendid monument upon which is written the name of Edward Trudeau. It is not a monument of gold, it is not the record of a successful tradesman, but it tells the story of one man's fortitude and endurance; shows how victory may be wrested from defeat; above all it tells of a victory not turned to profit for self, but of one, the fruits of which were devoted to the lessening of human suffering, saving of human life and the advancement of scientific knowledge. It is in itself an inspiration to all of us to serve the profession in a like spirit and a standing rebuke to those who are disloyal to its best traditions and who in the effort to amass riches become indifferent to the manner in which they are obtained.

MacCollom! voluntarily isolating himself, giving his thought and strength in humane effort, withdrawing from a good general practice to live almost exclusively in an atmosphere of contagion, and for a pittance if measured by the value of his service and by the spirit in which he undertakes it.

Trudeau! forced to leave an active and brilliant career at its very threshold, weak and suffering, far removed from all the stirring movement of a great work in a great profession, learning by himself in a desolate region how to treat pulmonary tuberculosis and applying the knowledge thus painfully gained to the cure of others, carrying on his scientific research under most discouraging conditions, yet producing such results as to put him in the forefront of medical scientists of his day.

These and their like on the one side, and on the other men who offer bribes to their fellow-practitioners to bring their patients

to them, men who make the turning over of their patients for operation to the surgeon conditional upon being paid a bribe by him, and men who are so little conscious of what constitutes honor and what dishonor as to defend such practices as being perfectly legitimate and proper.

These are the men who form the two contrasting pictures. We must choose between them, and in that choice prove either true or false to the best traditions of the profession. In the one case retaining, and in the other casting aside, the precious heritage of honor won from the past and placed in our hands for safe keeping.

I do not conceive the best way to overcome these evils to be by the enactment of further statutes in our written code. There is a simple but most effective weapon to be used against them. It consists in unsparing condemnation of such dealings by all to whom the fair fame of the profession is dear and who are unwilling that their own good name should suffer because of acts for which, though not committed by themselves, they must become responsible and share the blame so long as they allow them to pass unrebuked. They can not survive the influence of active, hostile public sentiment in our body. In the absence of such sentiment all the statutes that could be enacted would fail to suppress them.

I know well that I have but given expression to what everyone here present feels. My voice alone will avail little, but give it the force and authority of the indorsement of this Association in some definite form, and its influence may well extend throughout the country. I trust that the medical profession of the State of Indiana will do this and thus set a much needed example. Should you see fit to do so, we may rest assured that it will be but a short time before such practices cease to furnish examples of conduct unworthy of physicians and gentlemen.

A PLEA FOR CONSERVATIVE SURGERY OF THE STOMACH.

BY ALOIS B. GRAHAM, A. M., M. D., INDIANAPOLIS.

The writer is a staunch believer in gastric surgery when it is practiced in appropriate cases; therefore, the subject, a plea for conservative surgery of the stomach, does not and should not imply that he desires to advance any views which will in any way or manner attack or oppose the progress and marked advancement in this field of surgery.

Correctly speaking, surgical progress must necessarily imply two essentials: namely, First, the selection of appropriate cases. Second, surgical interference practiced by competent surgeons. It must avoid recklessness as well as unnecessary surgical interference.

Conservative surgery of the stomach implies the employment of methods which will attempt to effect a radical cure of a disease, or, which will attempt the removal of certain dangerous and very troublesome symptoms that can not be cured or relieved in any other way. In other words, conservative surgery of the stomach implies surgical interference in those cases where rational internal therapy is unable to accomplish reasonable alleviation or cure.

Twenty-five years ago it was the consensus of opinion among medical men that pelvic surgery was being abused. In fact, this opinion became so universal that, in the year 1891, Dr. Jackson, at that time President of the American Gynecological Society, in his annual address spoke of the abuses of pelvic surgery. He said, "Men were seized with a sort of mania for extirpating the female organs. Operators eager for fame found willing victims for mutilation on every hand. No one doubts that very much and reckless surgery was performed. It is a surgical crime to perform a serious, mutilating and dangerous operation which may be avoided

by other safer treatment. Hasty and incomplete reports of surgical cases were published. When neither patience nor conscientiousness are taken into service great harm may come to the cause of scientific advancement. When fallacies and partial conclusions are published broadcast, immense injury to truth and science ensue." Thomas Keith said, "In abdominal surgery, responsibility seems to have become old-fashioned and gone out of date."

To some of you it may seem that the writer is taking a rather advanced stand when he states that today we are confronted with an abuse of surgery in a new field. A quarter of a century ago, it was pelvic surgery that was being abused. Today, it is gastric surgery that is being abused. A quarter of a century ago, surgeons were seized with a sort of mania for extirpating the female organs. Today, surgeons, eager for fame, are seized with a similar mania for performing gastric surgery. Many hasty and incomplete reports have already been published. Bettman says, "Gastric surgery has become popular, and the next decade will witness its marvelous development. Much unnecessary operating will be done, and many valuable lives will be needlessly sacrificed. Gastric surgery will soon be exploited with all the recklessness that marked the development of pelvic surgery."

It is not my intention to give any space to a consideration of the various operative procedures practiced in gastric surgery, nor to express a preference for any of them. However, the writer has no hesitancy in expressing the opinion that every honest and conscientious member of the profession is very desirous of seeing the pendulum of gastric surgery find its correct place of usefulness. Much good work has already been performed. Better work will be accomplished in the near future. Certain hitherto fatal or incurable diseases of the stomach have been relieved by surgical interference. It is the fondest hope of the writer that all hitherto fatal or incurable diseases of the stomach will eventually yield to the correct and proper application of the surgeon's knife. Such progress, such advancement can not be attained by the surgeon alone. In order that we may ever hope to attain such results, means the earnest, honest and conscientious co-operation of both physician and surgeon.

Before it is possible to practice conservative surgery of the stomach, a precise or correct diagnosis, if in any way it is possible, must be made. The argument advanced by the surgeon is that he gets his cases too late to accomplish much. This argument is a good one, and the physician deserves censure in every instance in which he is able to make an early positive diagnosis of a possible surgical disease of the stomach, and does not refer the same to some competent surgeon without delay. On the other hand, if the surgeon receives his case too late to accomplish much, he likewise courts censure in attempting operative interference. As previously stated, progress and advancement in gastric surgery implies the earnest, honest and conscientious co-operation of both physician and surgeon. While it is true that many physicians are not doing good work, it is likewise true that many surgeons are doing bad work. While it is true that many physicians treat all diseases of the stomach in an empirical manner, it is likewise true that many surgeons are apt sometimes to overlook and even disregard the conception and work of those physicians who have endeavored to seek out the truth. While it is true many physicians never attempt to make a positive diagnosis of any disease of the stomach, it is likewise true that gastric surgery is being practiced by many who are incompetent to practice it. As Richardson says, "by those whose education is imperfect, who lack natural aptitude, whose environment is such that they never can gain that personal experience which alone will really fit them for what surgery means today. They are unable to make deductions from histories; to predict probable events; to perform operations skillfully; or to manage after treatment." While it is true that many physicians fail to detect early those gastric symptoms which demand, as the only chance of recovery, immediate operation, it is likewise true that many surgeons obtain unfortunate results by resorting to hasty surgical interference based on errors in diagnosis and prognosis. In the words of Samuel Johnson, "If no use be made of the labors of past ages, the world must remain always in the infancy of knowledge; if every man were to depend on his own unassisted observation for his knowledge of disease, every man would be mar-

velously ignorant and the science of medicine would stand still or cease to be."

Deavers says, "that in the surgery of today a vast amount of anatomic ignorance is concealed under a cloak of antiseptic detail." Powers says, "I venture to assert that if our surgeons read more of the work of the early masters their own views would be broadened and softened and made more tolerant." He further adds, "I believe that it is a common fault with the younger men to overestimate the operative surgery, a fault shared by many of us who are older. During the past few years operations have multiplied enormously. The blessings which they have conferred can not be estimated. But the field of surgery is far larger than can be seen through the operative glass, and I would ask whether we undertake an operative work with less forethought now that it has become so safe; whether care in diagnosis keeps pace with security in operating; whether we bring to a given case the degree of preparatory study which the case itself demands, and whether we carefully, patiently and laboriously work out a diagnosis before operating, or too often trust to the operation to make the diagnosis for us."

Billroth, in a letter to a Russian surgeon regarding a palatal neoplasm, refused to operate or to advise an operation, saying, "I am not that bold operator whom you knew years ago in Zurich. Before deciding on the necessity for an operation I always propose to myself the question: 'would you permit such an operation as you intend performing on your patient to be done on yourself?' Years and experience bring in their train a certain degree of hesitancy. Every year brings out clearer and clearer the shortcomings of our art."

Coe says, "all of us who have served an apprenticeship in gynecologic clinics have arrived at the conclusion that there is a wide difference between the word 'cured' on the patient's discharge slip and her condition a few months or years after operation."

Conservative surgery of the stomach demands that both physicians and surgeons do good work. There is no disputing the argument that it is the duty of the physician to make, if in any way

it is possible, a precise diagnosis of all diseases of the stomach in order to know in good time what the indications for surgical interference are. On the other hand, the surgeon must remember that the diagnosis of diseases of the stomach is not perfected to such a degree that the physician is always able to determine sufficiently early when a disease should be subjected to surgical interference. It is quite true that many physicians do not employ all the methods of investigation at their command, and as a result they never make a precise diagnosis. It is also true that some physicians condemn the use of the knife in any disease of the stomach, and they nurse their patients to the inevitable fatal termination in many instances. Above all, it must be remembered that a correct diagnosis not being made, correct treatment is impossible. The physician who fails to make a most careful and thorough examination of his patient, fails to make a correct diagnosis. In failing to make a correct diagnosis, he just as surely fails to relieve or cure his patient. I shall make the broad assertion that many physicians advise surgical interference for the cure of a disease of the stomach that might have readily yielded to medical treatment; and that many more cases are nursed by the internist, which if referred to the competent surgeon earlier might possibly have been relieved or cured by surgical interference. These men deserve as severe censure for such work as do many surgeons for the reckless employment of the knife in diseases of the stomach. However, it is a well known fact that where the physician shows a deficiency in his work, a careful perusal of the literature will show a surgeon keeping pace with him.

Riegel says, "If we are ever to get better results in dealing with gastric cancer, it will be when the internist acquires the diagnostic acumen necessary to enable him to strongly suspect malignancy, and possess in addition the courage necessary to enable him to act on that suspicion before it becomes a certainty." Thus the primary responsibility for conservative surgery of the stomach rests with the physician. He, if it is any way possible, should make the diagnosis. This does not mean that he should treat obscure and intractable diseases of the stomach in a routine manner. He must

not have only a faint suspicion of the pathology. He must know the real pathology if it can possibly be determined. If every physician would do the good and thorough work which is honestly and conscientiously demanded of him, it would certainly prevent many cases of stomach disease from drifting supinely on until too late to be relieved by appropriate surgical interference.

In every disease of the stomach, the early symptoms should be given serious study and consideration. The patient should be under the care of a skilled physician, and I can see no reason why every physician can not become skilled in this line of work. Such work on the part of the physician would give many cases a possible and some cases a good chance for recovery by surgical interference.

The writer agrees with Dr. McCaskey in the following statement: "In general it may be said that every case of progressive and intractable stomach disease, especially if developing in an otherwise healthy patient, or even in a patient who has had a very prolonged but comparatively slight digestive disorder, should not be allowed to continue more than four or five weeks without an accurate diagnosis being made by a competent physician. If the patient does not improve with favorable environment and proper local and general treatment but instead grows progressively worse, there comes a time when an exploratory laparotomy should be advised for the twofold purpose of determining the presence or absence of a neoplasm and its removal if present." If such a rule were followed by every physician, then the surgeon could not say that he gets his cases too late to accomplish much; but on the other hand, the skilful and competent surgeon would be enabled to obtain results in gastric surgery that can never be obtained in any other way. It is up to the physician to do his work well, in fact as it should be done; it is up to him to get his operable stomach cases to the surgeon earlier and the frightful mortality statistics will be reduced. There can be no question but that one of the causes of the high death rate in gastric surgery is dependent upon the condition of the patient. In the majority of cases only those who are beyond the hope of recovery are deemed ready for surgical interference. If we can but convince the physician that gastric surgery,

properly done and performed early, has been freed from much of its earlier terrors, marked progress and advancement will follow surgical interference in many diseases of the stomach. Further, the surgeon will not be able to say that the surgical interference was one of last resort, or that the fatal result was due to the extreme debility of the patient. Much good work on the part of not a few physicians has already been done, and is being done today. Good work on the part of all physicians is absolutely essential before we will be justified in saying that conservative surgery of the stomach is being practiced.

While it is the duty of every physician to improve his methods of investigation; while it is his duty to assist the surgeon in securing better results; and while he deserves censure for failing to perform this duty; yet in considering the subject a plea for conservative surgery of the stomach, we must endeavor also to determine what role the surgeon must play in this most important work.

The primary essential of the surgeon is that he be a competent man. He must take a broad and comprehensive view of the subject. He should show a tendency to be conservative and not too radical. His early experience and training should be of such a character as will enable him to choose wisely between the operative and non-operative. The late Mr. Greig Smith fixed the surgeon's standard of attainments for abdominal surgery in these words: "To be prepared, at the appearance of any complication, to apply the best known surgical technics; to do what is wanted, and no more than is wanted; to have the manner and method of each procedure mentally laid down in clear and definite lines; and generally to perform the operation in a steady, straight-forward, workmanlike manner through the endless complications that may arise, is no trifling call on the capabilities of a human being. Much of it may be learned by intelligent practice at the expense of the patient; much may be learned by careful study and practice on the dead body, but most of all will the young surgeon derive information from close and personal attendance at the operations of our great masters. Abdominal surgery is no longer a field for legitimate and versatile experiment; certain fixed and useful laws and

customs have been laid down by the dearly bought experience of great men; the abdominal surgeon ought to begin fully equipped with such knowledge as has been gathered for him."

From what has been said, I believe the majority of my hearers will agree with me in the statement that conservative surgery of the stomach must necessarily imply the hearty co-operation of good, honest, and conscientious physicians and surgeons. Both are essential and neither physician nor surgeon can ever hope to accomplish this work alone and unaided. If we are to accept Wathen's statement that abdominal surgeons will very soon teach us to make a pathological and surgical diagnosis of gastric ulcer, then we must consider the labor of such renowned physicians as Ewald, Riegel, Kussmaul, and Leube as fruitless. Does such a statement as the one of Wathen's tend to give us conservative surgery? I would say most emphatically, no. A study of the literature pertaining to gastric surgery shows it to abound in what Bettman has very correctly termed, "grotesque pathology." For example, Mayo, the eminent surgeon whom all of us admire and respect, says, "We must have more treatment and less pathology." Further, he says, "that neurasthenic symptoms are too often taken for organic disease." Wathen says, "In most cases of chronic gastric ulcer the stomach is in a permanently crippled condition." Reed says, "occasionally there is a downward displacement of the stomach, gastroptosis, in which the stomach hangs by its pyloric attachment." McGraw says, "when the duodenum becomes filled the further evacuation of the stomach is inhibited; when the vomit assumes a green hue we know that disorganization of the stomach has begun and when black that it is nearly completed." I ask you, gentlemen, do such statements, coming from men renowned for their surgical skill, show a tendency toward conservative surgery of the stomach? Do such statements prove that we need more treatment and less pathology, or that we should have more pathology and less surgery?

While it is true that the best physician fails not infrequently to make the much desired diagnosis of a disease of the stomach, yet this does not and can not explain why the surgeon is justified in

criticizing and throwing discredit upon the medical diagnosis as made by competent men. For example, Wathen says, "that hyperchlorhydria and hypochlorhydria are of secondary importance as diagnostic factors." Haggard says, "the difficulty about the recognition of ulcer and cancer in its earlier stages has been increased rather than simplified by the elaborate chemical and other tests which we have been led to believe are so essential to diagnosis, and so difficult of performance." Mayo says, "with a few simple means at his command the sensible practitioner is able to tell whether to send his patient to a surgeon or not." Another eminent surgeon says, "any stomach showing a total absence of free hydrochloric acid should be submitted to surgical interference at once." The writer could go on and quote many more similar expressions and all of them made by eminent surgeons; but I have given sufficient to demonstrate that conservative surgery of the stomach can never be practiced until these surgeons fully appreciate the grotesqueness of such statements, and consider them to be obsolete. The physician recognizes fully that he does not possess one single symptom that can be said to be pathognomonic of cancer of the stomach, and yet a careful perusal of the surgical literature pertaining to diseases of the stomach has failed to bring forth one single item of information or one point of view that can not be found clearly set forth in medical writings.

It is not the desire of the writer to, in any way or manner, belittle the medical or operative side of diseases of the stomach; but we must be honest and broad-minded men and employ every endeavor to seek out the truth. In other words, we must seek out that which is truly conservative. The physician, if he fails to perform his work, does not court praise, but deserves censure; and the same is true of the surgeon. I have not the slightest hesitancy in saying that many medical men are not doing good work in the diagnosis and treatment of diseases of the stomach, and further, that these same men seem to delight in nursing so-called incurable cases to a fatal termination. On the other hand, I am firm in my conviction that much unnecessary gastric surgery is being performed. Many a gastro-enterostomy is performed for a pyloric

stenosis that does not in reality exist. Some of this surgery is undoubtedly performed by the surgeon eager to make a reputation for himself, while some is performed because the surgeon honestly and conscientiously believes it to be necessary. Some gastric surgery could be avoided, and again many cases could be relieved or cured by surgical interference, if the physician would but do his work well. However, I have no patience with the surgeon who operates and then says he received his case too late to accomplish much. Bennett says, "A comprehensive view of the matter generally as it stands justifies, I believe, a forecast that ere many decades have passed away the operating surgeon as we know him will be a far less imposing figure in the medical landscape than he now is, and that operations, excepting in the restricted degree which I have mentioned, may be looked upon with as little favor as suppuration is regarded by us now. It has been said that the basis of surgery is handicraft, and this, in a sense, is true; but surely it is a truth only half told, for apart from the issues to which I have referred there is lying behind a far greater thing, the knowledge of when to apply that craftmanship of which every one who now aspires to the practice of surgery should make himself master. Nothing that has happened in the improvements connected with the practice of our art justifies, so far as I know, the modification of one iota of the edict of the great surgeon who, before advancing science had robbed operations of most of their horror, said, "The all important thing is not the skill with which you use the knife but the judgment with which you discern whether its employment is necessary or not." In other words, those who attach too much importance to mere mechanical dexterity not only to fail to reach the high-water mark of greatness, but entirely lose sight of the grand possibilities of their calling."

In conclusion, the key to the situation for the practice of conservative surgery of the stomach is manifest. Both physician and surgeon, good, honest, conscientious, well-qualified, and competent men must co-operate in this grand work. Both have their faults; both make mistakes. These must be remedied. When this has been done; when the competent physician has studied his case well

and after a few weeks rational treatment, without any improvement being manifested, he, without delay, refers the same to the competent surgeon; when surgery of the stomach ceases to be practiced by those who are incompetent to practice it; then will our mortality statistics, generally speaking, be greatly reduced, and it can be honestly, truthfully, and conscientiously said that conservative surgery of the stomach is being practiced.

THE PROPER LIMITATIONS OF THE MEDICAL AND SURGICAL TREATMENT OF GASTRIC ULCER.

BY G. W. M'CASKEY, A. M., M. D., OF FORT WAYNE.

Gastric ulcer is one of those diseases in the treatment of which internal medicine and surgery meet. Their precise indications are in the formative stage and are naturally, to some extent, a matter of individual judgment; and it is not at all strange, therefore, that striking differences of opinion should exist. Dogmatism should find no place in the discussion, and any claim on the part of internists that surgery has not an important role to play in the treatment of gastric ulcer is clearly wrong, while on the other hand the contention that gastric ulcer, like appendicitis, is essentially a surgical disease, is in my opinion, equally wrong. The truth lies between these two extreme propositions. The moment seems opportune to briefly review the results of these diverse modes of procedure, with the hope that each interchange of views will help to delimit their scope and indications. That the so-called medical treatment of gastric ulcer has been in some respects an unsatisfactory chapter must be freely admitted. Brinton held that only about one-half of all cases were curable, while Lebert only found a mortality of eight per cent., and Rosenheim of ten per cent. It has been clearly shown by Fenwick that the high mortality of gastric ulcer maintained by Brinton and Debove and Remond was due to faulty methods of analysis, as in not less than 40 per cent. of the fatal cases of the latter writers, tuberculosis was the real cause of death. The tremendous influence of proper methods and favorable conditions upon the outcome of gastric ulcer is well illustrated by the statement of Fenwick that seventeen per cent. of the cases of gastric ulcer occurring in his hospital clinic died from the immediate results of gastric ulcer, while in private practice, where cases could be better controlled and environment was more

favorable, the mortality did not exceed four per cent. Out of 556 cases treated by Leube, the cures were 74 per cent. and the mortality only 2.4 per cent., and it may be safely stated that when the diagnosis is made early and cases properly treated that the mortality need not exceed 5 per cent. Between the 74 per cent. that make a complete recovery and the 4 or 5 per cent. that die, there is a considerable group of cases in which the result is unsatisfactory and the cure incomplete, and it is with reference to this group of cases as well as the fatal ones that the question of surgery applies.

As a matter of fact, in spite of the enormous amount of work that has been done and the records of which have been published, we are without adequate and satisfactory data by which to judge the efficacy and the dangers of both the medical and surgical treatment of gastric ulcer. With reference to the surgical treatment, its advent is too recent to permit of final judgment, while the same difficulties must be encountered in following up and analyzing cases as those which have beset the experience from a medical point of view. What is needed is a large series of cases of all sorts carefully treated on a uniform plan. This really has been done, but beyond this it is necessary to follow both the cases which are apparently cured and those which are simply improved for a long period of time, which in the nature of things is only possible with a certain proportion of cases. There is no doubt whatever that many cases which are apparently cured by medical treatment will subsequently have a relapse, while presumably a much larger proportion of those cases which are only improved will suffer subsequent exacerbations more or less serious in character. While this is admittedly true, it remains to be shown that it will not be in a large measure true with reference to the cases treated surgically. It remains to be shown that a case cured surgically is any more completely or permanently cured than one which is cured without surgical treatment. The principal object of surgical treatment, and the trend of recent surgical experience is to make it more nearly the exclusive object, is physiological rest of the organ. That such rest can be secured over a long period of time more absolutely by means of a gastro-enterostomy than by any other means there is

not a shadow of a doubt. The opening of the adomen, however, and the gastro-intestinal anastomosis can not be viewed as a trivial affair, and can only be justified on the ground of either protracted disability and suffering or danger to the life of the patient, and the real question is whether such a degree of physiological rest as is requisite for the healing of the ulcer can not be secured and maintained without the hazards and nervous shock of the operating table. The mortality of the Mayos 89 uncomplicated gastro-enterostomies, reported in 1902, was 7.8 per cent. Munroe in 1904 reported 23 cases of gastro-enterostomy for nonmalignant stenosis, with a mortality of over 20 per cent. These cases were unusually unfavorable ones. On the other hand Moynihan reported 37 cases with no deaths. It is obvious from these and similar records that gastro-enterostomy is not without hazard and is not to be lightly advised.

Since the days of Cruveilhier up to the advent of gastric surgery, the principal object of the clinician, attained in various ways, has been to give the organ the greatest degree of rest consistent with the integrity of general nutrition. For a few days or a week this can be accomplished for all practical purposes quite as well by medical as by surgical means, with the possible exception of a few cases in which there is a continuous hypersecretion in the intervals of digestion. The experience of clinicians has shown, and especially the very large experience of Leube, that in about three-fourths of all cases the healing process will have begun and will have received such an impetus during this period of rest, supported, of course, by rectal alimentation, that suitable liquid nourishment may then be taken into the stomach without interfering with the healing process. For this 75 per cent., then, if they could be discriminated from the remaining 25 per cent., surgical treatment would be an absolutely unwarranted procedure. What is needed more than anything else in order to more clearly define the scope and efficacy of medical treatment is a fuller and more complete control of the something like 20 per cent. of cases who are discharged improved but not symptomatically cured. This is vitally important for two reasons, first to determine the final issues

in such cases, and second to secure such control of diet and environment as will give those cases the best possible chance for recovery. There can be no reasonable doubt that a considerable proportion of this 25 per cent. do badly because of dietetic indiscretions practiced either openly or surreptitiously. One of my cases, for instance, which was apparently following a strict diet and not doing very well, was detected by another patient boarding at the same place, eating the indiscriminate and not very well prepared food of an ordinary boarding-house in which arrangements had been made for a suitable diet. These are factors which influence the final results of medical treatment no more than they would of surgical.

There are other factors which tend to throw uncertainty upon the statistics, one of which is the possible fallacy of symptomatic cure. Robson and Moynihan put it as follows: "It is useful to hold in view the course of an ulcer of the leg, which, directly the healing stage has arrived, becomes free from pain. But this neither indicates that healing is completed, nor that care may cease." It is only fair to say, however, that the parallelism between an ulcer of the leg and ulcer of the stomach is certainly not any greater than that which could exist between a straight and curved line. The ulcer of the leg can be cleansed, treated with a dry dressing and remain subsequently free from irritation, and might easily therefore be free from symptoms, while an ulcer of the stomach, the functions of which can not be suspended with impunity as are those of the leg, is subjected to varying grades of irritation, and the absence of symptoms has therefore much greater significance than it would have in the case of a leg ulcer. Nevertheless, abundant clinical observation proves beyond doubt that owing to the personal equation of the patient or other causes gastric ulcer may exist absolutely latent and we must therefore admit the possibility that some of the cases which are symptomatically cured are not really so. Here again, however, this supposition will apply, so far as I can see, with absolutely the same force to a case treated surgically as to a case treated medically.

The experience of J. W. Russel is valuable in this connection,

in that it traces the after-history of 47 cases for periods of two to thirteen years, with an immediate mortality of 2.1 per cent. and recovery in 42.6 per cent. Of the 42.6 per cent. that recovered, 27.7 per cent. had but a single attack, while 14.9 per cent. recovered after one or more relapses. Of the remainder, 15 per cent. had repeated attacks, but were free from symptoms in the intervals, while 30 per cent. had more or less continuous pain. It appears from his experience that something more than one-fourth of the cases have more than one attack, while Sears has found recurrence in 60 per cent., which is certainly exceptional. These facts certainly have an important bearing on the question of the permanence of the cure produced by any means whatever, but probably will be found to apply equally to medical and surgical methods. Sears, in fact, admits that surgery does not always cure, and that recurrence has followed surgical treatment.

It is not my intention to enter into a full discussion of the various means of treatment from a medical point of view, although I will incidentally state the method which has given the best results in my own personal experience. One question can not well be passed without a brief discussion, and that is, shall food be given from the beginning of the treatment or not? The method of Luebe beginning with a period of starvation and rectal feeding is too well known to require discussion. Others in recent years have advocated giving the patient at once properly selected food for the stomach. Among the most interesting contributions along this line is the well known comparative series of cases reported by Greenough and Joslin. These two series of cases occurred in two different services of the Massachusetts general hospital. In one series of cases rectal feeding was uniformly followed for the first few days while in the other it was limited to the severer cases, lime water and milk being given from the start to all others. Of the cases who received rectal feeding from the first the recovery was 32 per cent., while of those who received food by the mouth from the beginning of treatment 44 per cent. were cured. The adoption of rectal feeding in the severer cases of the second group, however, vitiates the statistics as a whole, but probably tends to show that no

iron-clad rule is applicable to all cases, and that the treatment should be individualized.

It seems to me that chemical pathology has pointed the way, or rather has furnished some of the indications, for the treatment of gastric ulcer, as it has of so many another morbid condition. The formation of gastric ulcer, whatever may be the etiological factors, is a process of cytolysis. Excepting that it occurs in the fixed tissue of the stomach wall rather than in the floating cells of the blood, it is for the most part entirely analogous to the phenomena of hemolysis which have been so extensively studied within the last few years. The occurrence of cytolysis under the influence of a lysin is prevented by certain chemical products known as antibodies, the formation of which is stimulated by the presence of a lysin, but which presupposes as a *sine qua non* the integrity of the nutritional processes of the body. Perhaps the cytolysis which destroys the tissue in the circumscribed area of the gastric wall which is to become the seat of an ulcer may be the gastric juice or it may be the gastric juice plus something else. There are two conditions which may make this cytolysis possible, first, a lowered resistance of the circumscribed area of tissue from an unknown cause, whether thrombus or something else; and second, and perhaps coupled with the first, a failure on the part of the antibodies of the circulating fluid which bathes the cells to do their work. With the first of these conditions it is not my intention to deal. The second is fundamental in a therapeutical program, and is vital to the limitations of the resulting process. That it is dependent upon proper nutrition, with all that this implies, is perfectly obvious, and its bearing upon the question of properly feeding patients suffering from gastric ulcer need scarcely be pointed out. It seems to me perfectly clear when we take into account the widely different states of nutrition met with in the various cases of gastric ulcer that a plan of treatment suitable to one case might easily be entirely improper to the next. Patients that are fairly well nourished have, as we know, a certain amount of reserve nutrient material stored up within the organism upon which they can draw for a limited time, and if this is supplemented by properly

directed rectal feeding there seems to be no reason why in such patients the ulcer should not be given the benefit of complete physiological rest, as it can be done without substantially interfering with the chemical processes of nutrition which produce those protecting chemical bodies above referred to. On the other hand, patients which have become greatly emaciated and in whom the chemical processes of nutrition are necessarily greatly impaired, the reserved storage of nutritive material has been more or less completely used up and the chemical processes of the body, both constructive and protective, correspondingly weakened, and anything approaching starvation treatment in such a case is to be viewed with great apprehension and is liable to do more harm than good. What I would plead for, then, would be a differentiation of the cases, starvation with rectal feeding for various lengths of time in those cases to which it seems adapted, and earlier and perhaps instant feeding in those in which it is apparently demanded.

In the average case my method has been to put the patient to bed from three to six days with absolute starvation so far as stomach feeding is concerned, and give at the same time systematic rectal alimentation. If necessary, at the outset the stomach is cleansed with a one per cent. solution of sodium bicarbonate, but this is only indicated where there is an excess of mucus or other secretion. Immediately following this lavage, or without it, a single large dose of bismuth subnitrate, say about 90 grains, is given. This is repeated each morning if the conditions require lavage. At the expiration of the starvation period, which is continued for whatever length of time may seem proper in the individual case, feeding is resumed in general accordance with the Leube plan.

In cases, however, with greatly impaired nutrition, milk and lime water, or, better, egg albumen, should, I believe, be given from the onset, and supplemented, of course, by rectal alimentation.

I wish in conclusion to call attention to a few of the unfavorable aspects of the surgical treatment of gastric ulcer. One of these is the occurrence of acute perforating jejunal ulcer which occasion-

ally follows gastro-enterostomy. Another feature which can not be entirely free from objection is the permanent fixation which gastro-enterostomy entails between the stomach and intestine. It can not be otherwise than that such immobilization interferes with the motility of both organs, and if closure of the anastomotic opening occurs, as has been found by both Moynihan and Czerny, the motility of the stomach is permanently crippled. On the other hand as long as the anastomotic opening remains patent, the observations of Hartman and Soupalt have shown that in all cases of gastro-enterostomy, either anterior or posterior, both bile and pancreatic juice are regurgitated into the stomach, a phenomenon which may not be serious, but which can not be viewed with entire satisfaction.

Now it appears to me that the logical conclusion from all these facts is that every case of gastric ulcer ought if possible to have the benefit of a carefully conducted medical treatment at the hands of an intelligent practitioner before the question of surgery has been raised at all. In other words the case is a medical one and not a surgical one at the outset. When it comes to a recurrence, which the statistics go to show occurs in a large number of cases, the question is not quite so clear, but I am inclined to think that, barring severe symptoms which do not yield to the rest treatment, the patient should have at least a second chance at medical treatment. This conclusion ought to stand until it has been shown that recurrence does not follow surgical treatment, as precisely to the contrary now appears to be the fact. Nevertheless there is a group of cases which may either grow larger or smaller with increasing experience in which a gastro-enterostomy is clearly the proper line of treatment. It is perhaps impossible at the present time to accurately formulate the conditions which would justify the procedure. Perhaps repeated severe hemorrhages may be placed among the list, but not as a medical measure for the hemorrhage, as experience, so far as emergency operations for hemorrhage, scarcely justifies its repetition. Mumford and Stone (p. 156), who can not be suspected of a medical bias, say: "Scattered reports from numerous surgeons teach conclusively the lesson that emergency

operations to check violent gastric hemorrhage almost always end disastrously." This is very discouraging, but it would seem that for the present we must accept the logic of facts and consider a patient suffering from severe gastric hemorrhage safer with medical than with operative treatment. Severe and intractable symptoms aside from hemorrhage, especially pain and vomiting, are certainly among the factors to be considered. A large proportion of cases, however, in which these symptoms are very severe make good recoveries under medical treatment. The precsie length of time during which medical treatment should be followed in intractable cases before surgical intervention is invoked can not be decided by any hard and fast rule. The entire aspect of the case is quite as much a factor as time, and the two things must be taken together in the final analysis, and the resulting conclusion must be simply the judgment of the clinician based upon all available facts. We must bear in mind the influences which the state of general nutrition has upon the healing processes everywhere through the chemical composition of the blood, and a case may not be smyptomatically cured because the general nutrition is not up to the proper standard. Where it is possible in the face of the digestive disorders to put the patient on a proper nutritional plane this ought certainly to be done, and then sufficient time given before labeling the case not amenable to medical treatment.

There is one other thing that I would especially plead for in these cases, both in the preliminary diagnosis, during the progress of the treatment and as a criterion of end results, and that is repeated systematic scientific study of stomach secretion and motility and the material obtained from the fasting stomach. I doubt very much if a latent ulcer can exist unrecognized in the face of such a study. The character of the cellular debris, the bacteriological content, as shown both by stained specimens and fermentative tests, are all points of the most vital importance in reaching a conclusion, although they can only be rationally considered in conjunction with the anamnesis and complete clinical picture.

There is much in the current literature of surgery of the stomach that shows an apparent lack of appreciation of the gravity of an

abdominal section which is not altogether represented by the mortality, although this is not entirely nil.

As bearing on the question of time during which a case should have treatment before the intervention of surgery, Mumford and Stone quote with disapproval as being too broad a generalization the statement of a "Clear-headed Surgeon" that: "If you have a patient who has suffered for two years from a chronic dyspepsia, unrelieved by internal treatment, you may fairly say that his case is probably a surgical one;" which emphasizes the remark that I have already made that no hard and fast rule so far as time is concerned can be made, but that a critical study of the case by a competent internist, in conjunction perhaps with a consulting surgeon, is the only safe ground upon which to rest a decision, as the time may be two weks or two years. I will conclude with their further opinion, which has my entire approval, that we can not say of gastric ulcer what has come to be said of appendicitis, that it is purely a surgical disease, but that in many instances it is so, and that the judgment and possibly the services of a surgeon are desirable in a certain proportion of cases.

DISCUSSION OF THE PAPERS OF DRS. GRAHAM AND M'CASKEY.

Dr. Miles F. Porter, of Ft. Wayne: The subject is certainly an intensely interesting one, perhaps as important a one as is today being discussed by the medical profession. We all agree upon a few broad, general statements. I take it that conservatism, in its true sense, is what we are all after, physicians and surgeons alike; but I think it is rather nonsense than conservatism to say that a case of stomach disorder should be operated only after it is found out that it can not be cured any other way. I do not call that conservatism; I call that nonsense.

There is another element in this discussion. We talk about how long a man shall go about with a stomachache before he submits to a surgical operation. There is another element in the case. It is not a question of time altogether, by any means. Ask the man whether he is willing to continue to suffer for another few months

as he has in the past few months, or whether he will submit to an operation exploratory in character that I claim has no legitimate death rate. Ask him whether he will continue to suffer for six or eight weeks or months, or whether he will submit to an exploratory operation, with the understanding that if in the surgeon's judgment he shall proceed further he may do so. It is his stomach and it is his right to decide.

I do not know whether I understood Dr. Graham rightly or not; but if he said that stomachs hung by the pylorus do not produce invalidism, he is badly mistaken. I can show that they do occur, and it is the only thing the matter with the stomach, but it kills the man if you do not take it down. And if any one says that kind of stomach does not make a man sick, it is because he has not seen these stomachs. The man who has seen them knows what he is talking about.

As to operation, I wish to say that I never had in my whole life a case referred to me by the internist in time for a timely operation for gastric ulcer or cancer. That is true so far as I am concerned; not one single case. What I maintain is simply this, that you can not make a diagnosis until you see the stomach through the open belly in a large number of cases. The method of making the diagnosis in the largest proportion of cases is through the open belly, the opening having been made by a competent surgeon. Then you will find out what is present, and you will know that fifty per cent. of cases will be found to have perfectly healthy stomachs, but with disease of the gall bladder and gall ducts.

Dr. H. O. Pantzer, of Indianapolis: We have had two able papers upon a subject that is in the foreground of medical consideration at this time. Both sides of the subject have been ably presented, and the argument that has been produced in each paper requires little supplementation, or, indeed, correction. Extreme views are likely to be expressed at a time when the entire subject under consideration is in that early stage which, as in the parallel case of the gynecologists, was referred to in the first paper. Regarding Dr. Graham's paper I feel that possibly some of the harsh edge of his statement pertaining to early gastric surgery should

be taken off. I feel that gastric surgery is not liable to the same abuse as pelvic surgery, owing to the fact that the abdominal surgeon of today is the experienced gynecologist. We owe to the experience and the errors of the early gynecologists a great deal of what today gives us definite indications for operating, definite indications for not operating. We have decidedly gained by such efforts. There may be error, it is true. There may be deaths owing to gastric surgery. In its early days it is well that the warning note should be sounded, but it should be sounded forcibly and equally for both sides. I think it can not be put more forcibly on behalf of the internist than has been done by Dr. Porter, when he says that not a case has been referred to him in time to do efficient surgery. It is indeed in this stage incumbent upon both to come together early, and if there is anything in the two papers that I would emphasize it is the fact that when the medical treatment has not proved effective the surgeon should be then called in, not for surgery, but for consultation. As Dr. Porter says, the surgeon, as much as the internist, wants to do the patient good, and he is a safe man to put at the bedside of your friends. He is the man to weigh the ins and outs of its possibilities, and while the argument of Dr. McCaskey's paper is to my notion, I think a little of the dogmatism of the internist crops out when he says that the majority of cases of ulcer of the stomach have ended in tuberculosis, and does not add the remark that tuberculosis invariably supervenes upon malnutrition, but that undoubtedly the ulcer is back of the tuberculosis.

Dr. E. D. Clark, of Indianapolis: I was very much interested in the two papers and heartily agree with the paper of Dr. Graham especially. It sounds a warning note, and every surgeon, especially, should take heed to it. In some instances surgery of the stomach is carried to an extreme by some of our surgeons. I was for some months in the clinics of Miculicz, Isenberg and Hobenach, the men who have possibly done as much good surgery of the stomach as any men living, and they say very few of these cases should be operated upon. We have some men who are operating upon these cases by the hundred. I believe the operation on many

was absolutely unnecessary, if not absolutely wrong. Of course if we have a definite trouble, if we have had an ulcer of the stomach that has resulted in a stricture of the pylorus, then operation is no doubt advisable and we would get results from it. If we take the position of Dr. Porter that the man who has the bad stomach should ask the doctor whether he is going to cure him, he should ask another question, too, and that is whether or not he has made a careful pathological determination in the case. Dr. Graham brought out some good points, one as to the reckless manner in which the pathology is regarded by some of our surgeons. The surgeon today must be a bacteriologist and a pathologist. If not he is a dangerous surgeon.

I thank the essayists again for the papers. I think them both excellent.

Dr. A. B. Graham, of Indianapolis: The arguments brought out in my paper are based upon an experience in stomach work covering eight or ten years, and I do not believe I care to change any of them. I will agree with Dr. Porter in this one thing. The point I wanted to make was that the surgeons did not get the cases early enough. Dr. Porter says he never had one referred to him in which he could do a timely operation. I quoted Dr. McCaskey. I said the case should go to a competent medical man, not to take the pulse, the temperature and to look at the tongue, but to the man who studies the chemical condition of that stomach and knows the pathology. I believe there is a great deal of reckless surgery being done in the United States. There is a gentleman in this hall at the present time who says he was in Chicago and saw three or four gastroenterostomies performed for the purpose of improving technique. You can take almost any case of stomach trouble in which you have impaired motility and if you do an anterior or posterior enterostomy you will relieve the patient, and I claim there are cases of simple gastritis in which this operation is performed and then the surgeon reports that he has cured a case of probable pyloric stenosis.

Dr. Porter: I would like to have you refer in your remarks as

to how many cases of ulcer of the intestine occur after gastrointestinal anastomosis.

Dr. Graham: I can not tell that. I don't believe there are many. I don't believe gastroenterostomy affects that at all.

I am of the opinion that there is much bad surgery being done on the stomach. I have made four diagnoses of atrophic gastritis that I thought were malignant, but I could not make the diagnosis positively. They have gotten well under medical treatment. They are cases that might have been turned over to the surgeon and cured by thorough drainage of the stomach. Dr. McCaskey says we should treat them until we find we can not cure them. But here comes a case of achylia gastrica which can not be diagnosed without a thorough chemical examination after the well-known test meal. Einhorn's plan is to introduce a test meal and then examine the stomach contents in an hour, when you may find a total lack of acidity, when later you might find free hydrochloric acid. The average practitioner in such cases makes a test for lactic acid and thinks he finds it, or it may be some other, and he makes a diagnosis of malignant growth of the stomach. He refers the case to the surgeon for a gastroenterostomy and the patient gets well. Achylia gastrica is a simple disease. The point I want to make is the one Dr. Porter brought out, that we hold our cases too long. We should make thorough examinations and tests, put them upon the proper plan if we think it is purely a medical disease of the stomach, and if the trouble does not yield within a few weeks, or if the patient goes backward, then I say refer it to the surgeon.

Dr. Porter: I think it unjust to blame surgery with this Chicago recklessness. That is not surgery. That is the experiment of men who, if the truth were known, are disgracing surgery. It is not surgery. Surgery doesn't stand for it, and surgeons ought not to stand for it. They are men, possibly, who want to parade and are parading in the garb of surgery, but I submit, Mr. President, they are not surgeons.

THE EARLY DIAGNOSIS AND TREATMENT OF LUETIC INFECTION.

W. W. WADSWORTH, M. D., MUNCIE.

Luetic infection is of questionable origin and obscure early history. Its antiquity is supposed to be coexistent with the early civilization of Egypt, but of this positive proof is wanting. Certain it is that where, when or how it originated, the closing of the fifteenth and throughout the sixteenth century it was the greatest scourge of Europe. That the period of its supposed invasion of Europe began about the time of Columbus' discovery of America, led to the conclusion that it was brought back by the sailors of Columbus. However, in the light of subsequent research the reverse were perhaps nearer the truth. For it has not been positively demonstrated that the American Indian, the Aztec nor any of the inhabitants of the West India Islands were acquainted with it until introduced by the sailors of Columbus or other navigators of "foreign bottoms."

Following the siege of Naples under Charles VIII (1494), a malignant epidemic broke out in both the French and Italian armies. Among the Italians it was known as the "French evil" and the "Neapolitan disease." Following the defeat of Charles (1498), Louis XII captured Milan and through an agreement with Ferdinand of Spain, divided Naples. The French occupancy of both cities was followed by another epidemic, more fatal and far-reaching than ever, to which was given the royal title of "*Lues Venerae,*" presumably a derisive tribute to the head of the army transmitting the infection. Like "Cuban itch" it survived these wars and became the popular designation of the plague for many years thereafter.

While perhaps the infection is more prevalent today than ever before, its type has changed. The malignant and resistant forms

have gradually given away to the milder types with decreased mortality. The age of modified malignancy or milder manifestations of the disease can not be attributed to improved treatment, for our most approved treatment has undergone little change during the last 200 years. Rather it would seem that either the disease was decreasing in severity, running out, as it were, or else there had been created a latent racial immunity to its ancient ravages through what some authors call "the syphilization of mankind." Our blood strains are all more or less tainted and tolerant, and the severity of either the hereditary or acquired form is dependent upon the history of recent or remote ancestral infection. The general distribution and common prevalence of lues, its far-reaching effects, not only upon its individual victim, but through heredity to his progeny, makes it at once a disease of the highest pathologic and sociologic importance. It visits its iniquitous curse upon the hapless, helpless and innocent and entails more vicarious suffering than a million Gethsemanes. It involves the moral as well as the physical well-being in its acquisition and transmission. From this standpoint alone it is entitled to first consideration among the list of infectious and contagious diseases. Moreover, its undermining and debilitating effects, frequently pave the way to other disease. Anorexia, consequent anemia and general impoverishment lessens the vital resistance to, if it does not actually invite tuberculosis. That lues is due to a specific micro-organism there is no doubt; however, the spiro chaeta pallida may not as yet be fully recognized as its source.

Authorities differ as to whether lues is a local or constitutional disease at the time of the appearance of the initial lesion. But the consensus of opinion of modern syphilographers favors the contention that it is already a constitutional disease when the initial lesion makes its appearance. It certainly can not be regarded as a local disease when local treatment even to the excision of the infected area and its proximal glands neither cures nor retards its course.

"Experiments have shown that contact with the bacillus of other infectious diseases, for a few hours at most, is sufficient to

produce profound systemic infection even though the point of such infection be totally destroyed or extirpated," says Dr. Hyde. When we consider the great vascularity of the tissues usually involved, and their connection with or proximity to the lymphatic system, it is almost conclusive that the individual exposed to syphilitic virus has not escaped a constitutional infection simply because there is an absence of symptoms during the incubating or quiescent stage, but rather that the entire evolution of luetic infection, from the hour of exposure to its objective manifestations, is a germitive process. This process may be slow, subtle and insidious, but is nevertheless constant and effective. That this process has been going on from the very beginning is manifest from the appearance of the initial lesion at the site of infection and the adenopathy which accompanies it.

The general systemic disturbances of lues is analogous to that of other infectious diseases known to be of definite microbic origin, and leads therefore to the conclusion that the luetic lesion is caused by a specific microbe and that the symptoms following, such as anorexia, anemia, debility, with febrile disturbances, pain in the head, joints and muscles, together with the erythematous rashes and lymphatic involvement are the direct result of the invasion of the blood by the toxins of this microbe.

STAGES OF LUES.

The division of the various phases of the disease into separate stages or periods has had, since Ricord, the sanction of so many writers that it seems to be regarded as a fixed and almost necessary classification.

"From the moment of infection throughout the entire process of its evolution, there is, in an untreated case, neither interruption nor intermission," says Hdye. The apparent interludes or supposed latency is no more suggestive of a "stage" than is the most characteristic exthemata. "The toxemic product of the syphilitic virus is ever present, persistent and active, as the blood, systemic and tissue changes will attest." "There is," continues

Dr. Hyde, "neither an incubation, a delay nor an arrest. If our methods of observation were without flaw we should be able to detect movement toward a general infection from its very first to its completed step." In our attempt to study the evolution of syphilis the question of time, the crude hypothesis of an incubation and all other really artificial distinctions should be set aside. Hyde, therefore concludes, that "the period classification of Ricord, though ingenious, has served its day, and it is absolutely necessary to divorce the mind wholly from the suggestiveness of this doctrine."

As a matter of fact, there is no clear line of demarcation between the successive phenomena of syphilis as they appear in any given case. The whole plan of division into periods, stages, etc., has served a convenient purpose, no doubt, but it is admittedly misleading and deceptive. The primary hypothesis made it necessary to assume a secondary, and the secondary tertiary, and from the tertiary the "obituary" might be suggested as an orderly sequence. And by assuming the stage, and treating it as a distinct lesion, the "obituary" might be hastened. Again, it is misleading and deceptive from premise to conclusion, in that it conveys the idea that every case must be viewed from this standpoint and treated by this standard. This postulates the theory that each and every case is typical and must run a regular course. That if in doubt as to one stage we must await the next before instituting treatment. That following the chancre we have macules, and after macules we have papules, and from papules come pustules, succeeded by gummatous ulcerations, etc., which are in turn superseded by neuralgias, myalgias, arthritis, iritis, synovitis, periostitis, etc.

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Quite on the contrary, however, the initial lesion may subside with or without treatment and a number of months, or even years, supervene without apparent constitutional manifestations, until the individual shows marked teritary involvement. Again, a typical eruptive or so-called secondary, may be found without any known history. On the other hand the evolution of the disease may be so rapid and so marked that before the disappearance of the initial lesion a malignant teritary type has supervened.

There is, perhaps, no disease which presents greater diagnostic difficulties, or in which error in diagnosis more frequently occurs. Diagnosis of the initial lesion in a typical case can not be made with too great caution. "There is," says Hyde, "no single lesion, the appearance of which invariably signifies the presence of a chancre."

A chancre may be genital, perigenital or extragenital, and its appearance is usually modified by the tissues involved. The two most important pathological factors of the initial lesion, namely: the characteristic induration and the adanopathy may be present or absent, altogether; or one may be present and the other absent. But by far the greatest diagnostic difficulties are encountered where no positive history can be elicited and where all symptoms upon which a diagnosis can be predicated are either atypical or so confusing as to be valueless. This is especially applicable to the more advanced stages of the disease where the symptoms point to organic change. Habitual headaches, or neuralgias involving the cranial nerves may always be regarded as suggestive in the absence of suspicious history. Likewise an involvement of the sciatic, the intercostal, the crural or the cirvicobrachial should be carefully investigated before excluding lues.

The nervous system is a most frequent object of attack, especially during the advanced stages of the disease. Whether it be the sympathetic system with anorexia and its anemic accompaniment, the enfeebled circulation with a constant sense of chilliness and morbid emotions so frequent in luetic cachexia; or the sensory with the motor disturbances found in the various forms of paralysis, tabes, etc., are, in the vast majority of cases, of luetic origin. Fournier estimates that from seventy-five to eighty per cent. of the cases of locomotor ataxia are in syphilitic subjects.

Butler Diagnostics Internal Medicine (p. 742) says: "That paralysis of single cranial nerves or anomalous or atypical symptom groups are apt to be of syphilitic origin;" also that visceral syphilis present symptoms which do not differ greatly from non-syphilitic disease; and as a final diagnostic effort recommends the therapeutic test of iodid of potassium.

The consensus of opinion of modern syphilographers as to the prognosis of lues is dependent upon the early institution of proper and continued treatment. However, upon the equation of time allotted for a cure there is the widest latitude of opinion found. Hyde says, that "no fixed time for a cure can be given. Much depends upon the individual, the type of the disease and its duration prior to beginning treatment. That as a rule it requires from two to four years, and in many cases even longer." In this position Bangs and Hardway concur. White and Martin, Finger, Montgomery et al., compromise on three years. Our good friend Taylor, however, is more optimistic. In his last edition, "Genito-Urinary and Venereal Diseases" (p. 671), he makes the following statement: "As a result of advanced syphilography and the rich therapeutic armamentarium at our command, we are today in a position (at the beginning of the secondary stage) to speak encouragingly to our patient of his future. We can tell him truthfully that two years of careful, methodical and watchful treatment will be sufficient to cure him of his disease. As a result of such treatment he will see the syphilitic lesions disappear and fail to return. That he will enter into a period of health in which there will be no signs, whatever, of syphilis. He will thus remain and possess the power of procreating healthy children." "Blessed assurance!" Evidence that Prof. Taylor's confidence is increasing as the result of his long experience, more mature judgment and unexcelled opportunities for observation, it might be noted that he was not so positive in his earlier editions.

Fournier has recently traced the relationship of syhpilis to suicide. He observes that any morbidly depressed individual is a potential suicide. That the syphilitic toxins produce a general systemic depression which, together with the consciousness of the presence of a disease so loathesome, and by the laity so apt to be regarded as incurable, only intensifies the morbid desire to seek freedom in self-destruction. Is it any wonder? Is it not the result of the old teaching that syphilis is an incurable disease—a blight that will ever remain to blast the hopes and destroy the happiness of the individual for the balance of his life? This

ancient doctrine which still has a few moss-covered adherents, has been handed down from generation to generation until it has become a tradition among the laity. The alternative of today is from two to a dozen years of treatment. Isn't it really a wonder there are not a greater number of suicides? Upon this time-card schedule of treatment how many syphilitics do you suppose are ever cured?

Honor bright, fellow physicians, how many of you tell your patients that it will require from two to four years to effect a cure, and then have, at the end of that time, the satisfaction of pronouncing him cured and truimphantly discharging him with the scriptural injunction: "Go thy way and sin no more?" Is it not a fact that just about the time all objective evidence of the disease disappears, your patient disappears also, regardless of what you have said? But to the writer, the most untenable, because the most illogical, doctrine which has any professional following whatever (and we are glad to note is rapidly growing less) is that the proper time to exhibit constitutional treatment is at the onset of the so-called "secondary." The farmer works by the same rule when he destroys thistles, by cutting them when in full bloom. It would be unscientific farming to grub them up root and branch before they become large enough to encumber the earth and multiply their kind. They must be cut when in bloom, during the efflorescent stage.

Neither confrontation, the history of exposure or the presence of an initial lesion following the classic period of an "incubation" is sufficient evidence of guilt. The infection and not the patient must be given the full benefit of the doubt. Not until constitutional toxemia has been afforded time to penetrate the tissues and finally explodes in a virulent efflorescence, together with the lymphatic involvement, can the physician lawfully interfere.

Jonathan Hutchinson, in "The Practitioner" (August, 1904), makes the following statement: "Recent experience has conclusively shown that by beginning constitutional treatment before the development of secondary symptoms, that stage may be prevented and the patient may never know more of the malady than the

primary sore. Experience has shown that the anticipation of the secondary stage and the prevention of its development is of paramount importance in preventing symptoms of the tertiary class." Could any proposition be more reasonable or conclusion more logical? And where is the authority whose professional opinion would be given preference to the contrary? The error in awaiting ocular evidence as manifested in a lymphangitis or a lymphadenitis is that neither condition per se is pathognomonic. Nor does the eruptive stage alone afford positive diagnostic evidence. But granting it to be conclusive, what has been gained which will compensate for the loss of time sufficient to permit the entire system to become thoroughly poisoned by luetic toxemia?

Hyde says: "The earlier constitutional treatment is begun after positive diagnosis the better." Ravogli says: "The sooner constitutional treatment is introduced following infection the shorter, as a rule, will be the course of the disease." Edward Martin in "Hare's Therapeutics" (Vol. I, p. 696), says: "The strongest if not the only argument against early constitutional treatment is based upon the uncertainty of diagnosis." He sees no reason why constitutional treatment should not begin as soon as the chancre is observed. Tyson, "Practice of Medicine" (p. 180), says: "The constitutional treatment should begin at once. That mercury and iodine properly administered will eradicate the second stage and prevent the tertiary." But why multiply authority when a simple process of reasoning ought to evolve a practical working basis?

If lues be a constitutional disease produced by a microbe inoculation, if it enters a given point, there multiplies and through the toxins thus generated it involves the entire system; and since it has been definitely proven that by the exhibition of mercury, for instance, this toxemia, and the virus producing it, may be destroyed, where is there plausible argument for delay? If, again, syphilis be a constitutional disease, and we have a potential remedy, in whose presence it can not survive, then why not saturate the system with its antidote as a prophylaxis against the further invasion of the infection? Any constitutional disease demands

constitutional treatment, any other treatment is no treatment. It is sheerest folly to excise or cauterize a syphilitic lesion at any stage. It is but a temporizing makeshift at best. We therefore conclude that constitutional treatment is the only treatment of lues. That, as a rule, the time required for a cure is in exact ratio to the time treatment is exhibited following infection. We will go further than this: We firmly believe that were it possible to saturate the system of the victim with the antidote, immediately following infection, if an initial lesion even appeared it would end there; i. e., we do not believe the infection would develop in a system thoroughly saturated with its antidote.

But there is still another equally important reason for the early exhibition of constitutional treatment, namely: it is the time of greatest anxiety to the patient. It is during this impressionable state he is most tractable and easiest controlled. It is for him "the psychological moment." With apologies to Pope:

> The luetic lesion is so very bad,
> That to be hated needs only to be had;
> But had too long, familiar grows the sore,
> They first fear, then endure, then ignore.

In other words, the discovery of the presence of the disease creates three distinct successive mental states in the victim. The first is a morbid fear, great anxiety accompanied, in those capable of finer feelings, by remorse and shame. This is followed by a second mental state, when the mind takes on a more philosophic turn and he decides to "grin and bear it." This is the period of mental toleration which is sooner or later succeeded by doubt (that he ever had it) and final indifference. It is during this state of mind he ceases treatment. The treatment indicated therefore is mental and moral as well as medical. The urgent necessity for prompt and continued medication is scarcely less important to the individual than the cultivation of a healthy mental and moral environment.

Little need be said of the relative merit of the various therapeutic agents employed in the treatment of lues. Mercury is today

as for centuries past the most efficient drug exhibited in the general treatment of this infection. If mercury has not a rival it certainly has a powerful adjuvant in iodine. The specific action of iodine in its many compounds is too well known to discuss. Either given alone or in combination with mercury the results are usually marked. The happiest results obtained from mercury are in combination with Kalium Iodatum. The objection to the long continued use of mercury is the danger of tissue deposits which, when followed by potassium iodid later, is apt to produce phyalism. K I stimulates the assimilative power of the system, and through its ready diffusibility with the blood prevents such tissue deposits. K I should be introduced with extreme caution and the dosage measured, always, by the physiologic and therapeutic effects and individual toleration. The reader doesn't believe any advantage is gained from the large doses frequently claimed to have been given by some physicians. The idea that increased potency is proportionate to the size of the dose seems to have had its origin in that far-fabled Atlantis, "Hot Springs," where mercury and K I are made the chief articles of diet.

The long continued administration of large doses of K I is apt to be followed by an iodism as distressing and unsightly as the disease for which it was given. The painful, even caustic alkalinity of potassium ought to condemn over-large doses; while its strong affinity for water indicates the liberal draughts advised in its internal administration, thus mitigating its hydroscopic action upon the tissues and aiding its absorption. Continuous instead of intermittent treatment is advocated. Mercury should be given with K I either alternately or in combination.

When in doubt as to diagnosis of any chronic, indolent ulcer give K I. When perplexed as to diagnosis of some late, obscure nervous symptom group, give K I for its diagnostic value.

When diagnosis is positive, give K I as early as possible and as long as possible.

SYPHILIS, PAST AND PRESENT; ITS BIRTH AND ORIGIN; LITERATURE, SYMPTOMATOLOGY AND CURABILITY; ITS RELATION TO MARRIAGE; INNOCENT SYPHILIS AND SOCIAL PROPHYLAXIS.

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In the beginning God created the heavens and the earth—and syphilis, was the statement of Ricord, who, in 1838, first differentiated syphilis from gonorrhea, the first great step out of the stage of confusion into the present knowledge of venereal diseases. His student and disciple, afterwards his confrere, Bassereau, in 1852 published his lucid separation of the chancroid from syphilis, overthrowing the teaching of three centuries that all venereal sores are due to a single virus—the doctrine of unicism. There were others of this Gallic school, notably Fournier, whose work on Syphilis and Marriage will be a classic for all time, and Buret, whose spectacular History of Syphilis, Past and Present, in three volumes, is perhaps the most readable book in the history of this disease, as old as human history—"the daughter of the primitive ages." Buret writes with the gayety of the French, but the seriousness of the subject is not impaired, and his interest and stimulation are as infectious as the disease itself.

History and Literature.—In the ancient literature of the Chinese and Japanese, the initial lesions of the disease; its cutaneous, osseous, and visceral manifestations were described distinctively, and the Chinese for centuries demonstrated the value of mercury as a curative agency. Papyri and cuneiform inscriptions from Egypt, Assyria and Babylon, stored in the collections of scientific societies, indicate clearly that by the people living at the time these records were made, a definite relation was established between local genital disease resulting from sexual indulgence, and general lesions observed later upon the trunk, limbs and organs of sense.

In the records and traditions of the Hebrews there is presented a field where ripe medical scholarship and painstaking care have produced definite results. In these passages we have the sorrowful expressions of David, bewailing the loss of his child by Bathsheba. The disease of his bones, the loss of his strength, osteocopic pains, the cleaving of his tongue to his palate, have been urged as proof of a syphilis derived from Uriah's wife, and the cause by inheritance of the premature death of a child—a child whose death had been predicted by Nathan, speaking the voice and wrath of God. "For the Lord has spoken thee. Behold, I will visit evil upon thy house; the son who is born to thee will die."

Examining ancient literature further and more deeply, we turn to the ancient records of the Vedas, and here again is proof of the early appearance among human beings of the disease, syphilis.

Passing in review other nations of antiquity, we come to the Greeks, a people whose license of manners and laws permitted the largest opportunity for the spread of sexual maladies. Here, in the writings of Thucydides, Dion Chrysostom, and others, are described the raucous voice, the flattened nose, the ulcerations of the legs, and lesions of other parts of the body, such as the hands and feet, the result of venereal contagion, leaving a bar of black across the sexual history of almost every nation preceding the Christian era. The literature of ancient Rome, and of the Dark Ages, abounds in further descriptions. Lucretius speaks of syphilis as the "plague of Athens," confirming the conditions vouched for by Thucydides. The Latin poet states that the victims of the scourge are not always attacked by the "plague," properly so called. There are other manifestations, and no less terrible; he says: "Did they avoid this impetuous torrent poisoning the blood, the disease then threw itself upon the nerves and joints, and often the generative organs of the body, and fearing the terrible threshold of death, some lived by giving to the burning iron the remnants of their virility."

In modern times the descriptive fancy of the poet has impressed itself in the literature of Shakespeare, Pope, Keats, Hood, Gay, and numerous other writers. Timon, the misanthrope, in his cave, urged the courtesans of Alcibiades to spread among the

Athenians, whom he so hated, the disease recognized by the Elizabethan physicians, and so well described by Shakespeare in the play, "Timon of Athens":

"Consumption sow in hollow bones of men; strike their sharp shins.
Crack the lawyer's voice, that he may never more false title plead.
Down with the nose; down with it flat—
Take the bridge quite away, and make the curl'd-pate ruffians bald.
Let your activities defeat and quell the source of all erection."

The grave-digger in Hamlet answers the question as to how long a man will lie in earth ere he rot, that he will last eight or nine years, "If he be not rotten before he die, as we have many pocky corses nowadays that will scarce hold the laying-in."

John Gay, a delightful English poet, who in the midst of the corrupt age following the Elizabethan poets, was permitted by favor of the Muse, to portray human life and passions and sentiments like the Bard of Avon. Witness his description of syphilis and the accidents of its acquisition, no different today than in the Sixteenth century, when Fracaster attributed it to a shepherd who, in response to his passion, yielded to Bacchus and then easily to Venus:

"I knew a yoeman, who, for thirst of gain,
To the great city drove from Devon's plain,
His numerous lowing herd. His herds he sold,
And his deep leathren pocket bagg'd with gold.
Drawn by a fraudful nymph, he gaz'd, he sighed;
Unmindful of his home, and distant bride,
She leads the willing victim to his doom
Thro' winding alleys to her cobweb room.
Thence thro' the streets he reels from post to post,
Valiant with wine, nor knows his treasure lost.
The vagrant wretch th' assembled watchman spies,
He waves his hanger, and their poles defies.
Deep in the roundhouse pent all night he snores,
And next morning vain his fate deplores.
Ah! hapless swain! unus'd to pains and ills,
Cans't thou forego roast beef for nauseous pills?
How wilt thou lift to heav'n thy eyes and hands,
When the long scroll the surgeon's fees demands?
Or else (ye Gods! avert that worst disgrace)
Thy ruined nose falls level with thy face;
Then shall thy wife thy loathsome kiss disdain,
And wholesome neighbors from thy mug refrain."

It is a far cry from the poets who held the mirror up to nature in the theaters of London back to the days of Eschylus and Pericles. It is yet a longer flight to the tented fields of the sweet singer of Israel, who proclaims his own punishment and his final recovery after his sin with Uriah's wife, preceded, as it was, by lust and murder. And so all through the historic ages there exists an abundant literature to prove that syphilis, one of the earliest of diseases, has been handed down through successive generations of men to the present time.

From literature we may turn to ethnology for further demonstration of its antiquity. Syphilis in prehistoric ages has been inferred after a close study of bones exhumed in different parts of the earth, and exhibiting lesions identical with or similar to those recognized in bones in which there is no question as to the syphilitic processes. Thus, in France, Peru, Ecuador, Tennessee, Colorado, California, Lima, and other places, bones have been exhumed showing exostoses and results of periostitis, ostitis, sclerosis, caries, and other morbid processes. These lesions have been interpreted by most learned scientists to be due unequivocably to syphilis, and from proofs of this character the prehistoric existence of the disease has been considered established and confirmed.

From the time of David, warrior of old, to the time of Sharkey, who is said to have fought Jeffries in the prize-ring at Coney Island with the roseola of syphilis on his chest; or Corbett, who is divorced from his wife on account of it; or Kid McCoy; warriors of today—syphilis has been ever in our midst. There have been more noted world heroes: Francis the First, King of France, who took the first mercurial pills; Henry the Eighth, King of England, who condemned to death Cardinal Wolsey, not because he had betrayed his political confidences, but because he was told by his medical adviser that Cardinal Wolsey had conveyed to him an infectious disease, syphilis, by breathing in his ear, the method by which the physicians explained the contagion of the disease to kings. And other notable lights in the social and political world, past and present, have been afflicted with it; for syphilis is an aristocratic as well as a democratic disease, and is no respecter of persons.

Syphilis is a complex disease; a theatrical, spectacular disease, having an evolution characterized by three distinct periods, the first two of which are contagious from their inception, and have their seat either in the integument or the mucous membranes. The third series of lesions attack the subcutaneous connective tissues and the different organs: the bones, the nerve tissues, glands, viscera, brain, etc.

The first period limits itself to a local accident at the site of contact, causing one or sometimes several chancres. This is what has been by consent denominated the primary lesion.

The syphilitic chancre, also called the indurated, or hard chancre, due to the parchment-like sensation which comes as a rule upon attempting to bend it between the thumb and index finger, is naught but a simple erosion, an excoriation, markedly superficial, with round contours, and exuding a colorless, transparent fluid, giving the ulcerated surface a varnished appearance. Its color is in general a bright red, sometimes a lardaceous gray. Most often the syphilitic chancre is single; at times several exist, but they have all appeared at the same time and disappear together. And as a last symptom, which is extremely important in the diagnosis, there is no pain resulting from pressure. Unfortunately, there is no pain in syphilis in the first and secondary stages, and these periods, as you all know, are the insidious and dangerous ones.

Now listen, for comparison, to the description of the soft chancre, also called the simple chancre, or flying chancre, which does not "get into the blood," as the popular expression goes; but this flying chancre annoys the patient without frightening him, and may become phagedenic or ulcerous, which is to say, that it eats, gnaws, and advances.

The soft chancre rarely exists singly; often several chancres appear simultaneously or successively by autoinoculation. We no longer deal with a simple excoriation; it is a true loss of substance. The word chancre does not belie its etymology. The skin is destroyed, the edges are perforated, as if punched out, while serration is observed along the edges, which are red and broken, with a white line having the form of a collarette around the ulcer; the

bottom is grayish, suppuration is present and highly contagious, and the slightest contact produces acute pain.

In phagadenic chancre the ulcer increases peripherally. It penetrates into the connective tissue, which it destroys, and under the skin, which it perforates at various points. Its winding course is rarely regular, and the disturbances are difficult to repair. It always leaves a well-marked scar, and it may result in bubo, septicemia, or pyemia. So one may die of a chancre, but it is extremely rare in the present day, with our knowledge of genito-urinary complications.

One more point and I will have done with this parallel and comparison. The soft chancre is sometimes accompanied by an adenitis, that is, an inflammation of a gland in the groin, genarally known and commonly called the "bubo," which is always painful and often suppurates.

In the primary lesions of syphilis there will be a swelling among the glands so connected, especially at first in the neighborhood of the genitals. This gland in soft chancre, which is sometimes as large as a walnut, is known in hospital slang and among the laity as a blueball. However, in syphilis or hard chancre, the glands so involved are absolutely indolent, and they do not suppurate, and rarely bother the patient.

As regards the time of appearance of these lesions, the soft chancre appears promptly, two or three days after the infecting intercourse, rarely after eight days, while the syphilitic virus gathers its forces, and it is only at the end of twenty days or one month, on an average, after infection, that it appears.

Such are the practical points which serve to distinguish between the small excoriation, more or less indurated or hardened, and the soft chancre, which may be, as we have seen above, not at all simple. To be complete, it would be necessary to enter into many other details and describe, for example, mixed chancres, which contain both elements, and may put the physician on the wrong track, at least in the beginning; but we need not overstep the bounds which we have set for ourselves, and I will not explain these.

The indurated chancre lasts in the neighborhood of four to six

weeks, sometimes less, rarely more, and heals spontaneously. This is why we seldom have an opportunity of seeing it in women. As it produces no pain and only has to choose some fold to conceal itself, it is only by accident that the individual possessor of the chancre notices it, and then she must feel worried at the presence of a "nail-scratch," the common name of the prostitutes for this, and so she determines to seek the advice of a physician, or she thinks herself cunning by cauterizing it, and the erosion becomes larger without healing any faster. Better were it for her if she patiently await the secondary accidents, which never fail to make their appearance in six weeks or two months, and always confirm the diagnosis.

We have then, as the cardinal symptoms of primary syphilis, the chancre and the enlarged adjacent lymphatic glands.

Second Stage.—The local accident has now healed, or nearly healed, and the patient observes a slight macular rash, about the waist or upon the chest. Small red spots, lenticular, covered or not with epidermic scales; this is the roseola. There exist a number of varieties They may be papular, or vesicular, or pustular. This rash may be abundant or discreet; it is clear, of a dark rose color at the beginning, changing to coppery red. Often the spots are papular, or become surrounded with an epidermic scale, which is very characteristic. At other times the roseola spreads itself en masse, or in regular islands. It is then styled erythematous, or "blushing" syphilis.

So much for the body. There are other varieties of which we might speak if there were occasion to do so. The eruption may cover the entire trunk and limbs, rarely on the face, and fortunately so. However, it may show itself upon the forehead as a band of papules, the so-called Crown of Venus. This is often one of the most distressing symptoms to the syphilitic, as it causes comment among friends or home folks.

Ofttimes the hair falls out, but rarely in its entirety. This is the syphilitic alopecia. The beard or eyebrows and eyelashes sometimes fall off, but rarely. I have a case of this nature at the present time under observation. There is, unhappily, no

treatment for this falling of the hair except the general treatment of syphilis, but it is never permanent and lasts but two or three weeks. The hair always returns.

In the mouth, on the lips, the internal surface of the cheeks, the tonsils, the palate, and the tongue are frequently found, in greater or less number, small ulcers, often surrounded by a bright red space and covered with a whitish secretion which is very characteristic. They look sometimes like aphthae patches; sometimes like diphtheritic patches, sometimes like stomatitis, or stomach sores, for which they are often mistaken. They heal rapidly under cauterization, but always and only when combined with internal treatment. They are numerous in the users of alcohol and tobacco.

Back of the ears other glands are involved like those in the groin, and they likewise are very hard and never suppurate. The patient complains of these kernels in the back of his neck, and says he does not understand what causes them. They are a part of the general constitutional symptoms of syphilis.

About the anus and on the genitals are generally encountered papular or papulo-hypertrophic syphilides, also called mucus patches, and which heal under cauterization or lotions. For these we must also give internal treatment.

Next, covering all, we have a peculiar anemia, or weakening of the system, which yields to mercury and tonics. For mercury, which was abused in the Sixteenth century and is unjustly condemned even in our times, when we know how to give it, cures this anemia of syphilis, as it attacks the syphilides and not the constitution of the individual. This is frequently exemplified by the rapid increase in weight of a syphilitic when placed upon mercurial treatment. It is a matter of no uncommon observation that under the influence of mercury some patients increase a pound a day in weight. I had a patient who gained thirty-seven pounds in two months. This does not mean, however, that all these symptoms may not relapse. If the patient who believes himself cured after the first stages of this disease, completely abandon internal treatment, before two months have elapsed the lesions may return.

It follows, then, that the patient must be temperate and avoid excesses of all kinds, and follow the consistent and persistent treatment for the required number of years.

There are still other symptoms, less prominent, which I will merely mention. First, the syphilitic fever, which occurs in syphilis in the early period of the secondary symptoms. Again, the nocturnal cephalalgia, a sort of headache giving the sensation of a band of iron pressing more especially on the back of the neck, commencing in the evening and only ceasing in the morning. This symptom is ordinarily very short, only eight to fifteen days, but is generally observed.

Lesions affecting the eyes, keratitis, iritis, choroiditis, etc., are also seen, but not so frequently. Finally, arthritis, or syphilitic rheumatism, which is often blamed unjustly upon the medicine which the prejudiced or unthinking patient may be taking.

The Third Period.—Let us now approach the tertiary period, in which the disease is no longer dangerous except to the syphilitic himself. No pain, some anguish, some remorse, a little despair, perhaps some melancholy, but only dangerous for others during that secondary period! Up to the present it was relatively nothing but roses and plain sailing, the danger existing only for others. But let me hasten to explain to you that in a patient who has treated himself well, the tertiary accidents, as a rule, are reduced to a small thing, and often never appear at all, or they are postponed to such an extent that the patient before their appearance should attain the age at which death comes, no matter from what cause. Life being somewhat relative, it is plain that if we, for example, prolong the life of a consumptive to eighty years in such manner that he dies of apoplexy or old age, we may consider him as having been cured of his syphilitic trouble. And so it is with syphilis. I have already stated that the third and last period was directed to the connective tissue. Besides, the luetic process in a general way is characterized by a proliferation of connective tissue. This is why alcoholic beverages are harmful to syphilitics. In addition to this, drunkards are predisposed to a host of other

diseases which owe their origin to proliferation and condensation or contraction of connective tissue.

I will first mention cirrhosis of the liver—always mortal. Then cardiac lesions may occur. As a matter of fact the poor valves are continually bathed in a body saturated with alcohol, and shrivel or become insufficient, just as they do in a preserving jar, and an impediment in the circulation of the blood ensues. It is the same thing with the heart, and so, disciples of Bacchus, think of your valves, and brain substance, and spinal cord, and nerves, all yielding to the pernicious effects of alcohol. They harden: they shrivel; they dry up. And add to this a syphilis, which has the same influence, and treat it with contempt, and contemplate the result.

I would not put it down as a rule that drunkards are the only ones who may have serious tertiary accidents. It must not be forgotten that there are certain cases in which, outside of alcoholism, or tuberculosis, syphilis produces deepest ravages, but it is exceedingly rare when patients have followed out treatment.

Let me say, also, in passing, that a certain number of patients, fortunately in the minority, have had dealings with quacks who repudiate mercury and treat their patients in a fantastic manner; or with those who give them only candy with water; or with physio-meds, who use harmless herbs instead of mercury. Alas! again there are still drug-store venders of quack remedies, the Indian cure, Gun-Wa, or the Chinese cure, or other so-called anti-syphilitic remedies. How unhappy and unfortunate are these cases! How gullible is human nature after all! Alas! we meet them in our lecture hours; all too common in my clinics at the Medical College I see the terrible and frightful ravages of untreated, mistreated syphilis in the miserable patients suffering from various tertiary manifestations.

Now, it may be objected that syphilis is a disease of well-defined cycles, that it is a disease of three distinct periods, and that no matter what he has done, the patient will get well of his chancre, or his mucous or cutaneous syphilides, and will enter upon the tertiary phase without retaining any trace of his anterior lesions.

Granted; but it is principally from the point of view of this tertiary period that we are discussing the subject. The first two never ought to constitute any serious anxiety to us as physicians. They are disagreeable; they are infective; slightly mutilating, but rarely painful. Mercury administered according to the classical rules helps nature in her reparative work. It eliminates itself by way of the secretions, after having hastened absorption of the proliferated cellular tissue, whose exuberance has manifested itself in a manner as varied and theatrical as it was complex.

When the tertiary period arrives, if it comes at all, half of the work is done, and then iodine will be sufficient. And so we have a remedy which will control and even cure many of the tertiary accidents.

I have stated that the syphilitic virus in the tertiary period attacks the connective tissue. The most common lesions are the masses in the form of agglomerated tubercles which are developed in the connective tissue. They are gummata, so called on account of the gummy appearance of the particles they contain at the period of their softening. These accidents show at the end of eight, ten, fifteen, or twenty years; sometimes later, but rarely during the first few years of infection. At first they are hard tumors, painful to the touch, which soften, open and exude a yellow liquid similar to a solution of gum, and suppurate a little. When all this matter has escaped, cicatrization begins and scar tissue forms. These gummata may occur in the brain, from which arise temporary paralysis and epilepsy; or in the connective tissues of the glands and muscles, from which arise various functional troubles whose description would make us lose sight of our objective point. Various fibrous bands may form in the testicles, giving rise to sterility. These are all infrequent accidents, and but rarely met with.

Again, the osseous system may be involved. We may have ostitis, an inflammation, attacking the superficies of the bones. The same is true of caries and necrosis (bone rot), results of ostitis. There is observed a swelling of the periosteum without any lesions of the bones, constituting periostitis. Then we may have

the interior of the bone involved. These bone lesions are more interesting to us than any other lesions of syphilis, inasmuch as they serve to prove the existence of syphilis at a prehistoric era. They abound through syphilis both in the past and present. Exostosis frequently causes pains called osteocopic pains.

The sites or predilection of these tumors are the bones of the skull, the clavicle, the ulna, the lower part of the radius, and the extremity of the sternum.

The Nervous System.—Finally we come to the nervous system. It is here the heart of hope in syphilis is dashed against the rock of despair. Syphilis of the nervous system! Ah, yes! How many of us know not some paralytic friend, hobbling with his cane, stumbling where he walks, where he was once brisk and active. How many of us know not some friend, victim of this arch-demon, in whom the throne of reason has been destroyed? How many of us have watched the peculiar gait and walk of the ataxic or tabetic patient? How many of us have not been saddened by the sight of some blind person, led by his child, and wondered how he became blind? Yes, syphilis of the nervous system! apoplexy, paresis and insanity, tabes, locomotor ataxia, and helplessness, blindness and death! The elimination of the para-syphilides is the stumbling block of the physician—the end of hope and health, of pomp and power. They form, indeed, a sad picture; so sad that I shall pass it hastily, with the statement that not 1 per cent. of those afflicted with syphilis suffer from these accidents.

Sad, indeed, are the consequences, frightful the damage from the parasyphilides, the nervous manifestation of tertiary syphilis.

But enough of the symptomatology of syphilis! I have but one final statement to make, and that is, that syphilis can never be acquired but once. This is the one gleam of hope we always hold out to our patients.

Its Frequency; Its Curability, and By What Remedies.—Every tenth person in our hospitals has some form of syphilis; every tenth article in medical magazines is relative to some manifestation of it; but it is not a disease of the poor alone. Related to a natural function and dominated by impulse and passion, syphilis

cuts all lines of aristocracy and wealth, of law and social state, of morality and religion. Of the venereal diseases it is not disfiguring and destructive of tissue, like chancroid, while gonorrhea, as Keyes observed thirty years ago, sends more patients to their graves, and with more suffering, than syphilis.

Ricord, avowing his belief in purgatory, said that in his sojourn there he expected troops of men would pass him by, pointing the finger of scorn and taunting him with the cry: "Ah! Ricord! there you go! and you could not cure my gleet!" The way to death by gonorrhea in men is through stricture; fatal cystitis; surgical kidney, and prostatic disease. In women, through ovarian or tubal disturbances or other disease of the pelvic organs. Both diseases are yielding to increased medical and surgical knowledge; both are curable diseases.

The Manageability of Syphilis.—Syphilis is a manageable disease, one of the most subservient to treatment which we know. It is rarely fatal, except in the visceral form, and this nine out of ten escape.

Five hundred grains (an ounce) of the yellow protoiodide of mercury made into one-quarter grain tablets and fed to your patient over a course of two years, will cure cases of ordinary syphilis. One hundred grains of bichloride of mercury (ten cents' worth), the corrosive sublimate of commerce, divided into broken doses and distributed over a period of two years, will accomplish the same results. One-half a drachm of blue ointment, well rubbed into the skin every other day, will effect the same result. It is all we ever use in infants with hereditary syphilis.

Mercury, whether used as quick-silver, as by the Chinese for centuries; or the protoiodide, by the French; or the bichloride, by the English and New Yorkers; or blue ointment, by the Germans and Vienese, or in all forms, as at Hot Springs—mercury, whether by ingestion, friction, fumigation, injection or endermic method of administration—mercury is the sovereign remedy for syphilis. The smitten worshippers of Venus early invoke the mercies of Mercury, and the god rarely fails to come to their aid. Oh! well did Ricord say, with his customary felicity, that it was not Jupiter, but Mercury, that Venus should have wed!

And especially in the tertiary lesions, which are the most destructive of the organs and functions, our simple weapons give the most brilliant results. A dollar's worth of iodide of potash will generally cure the most foul and mutilating ulcers, and relieve the most distressing symptoms of tertiary syphilis.

Says Dr. E. L. Keyes of the use of the iodide of potash: "No means in the physician's hands places him so near the Deity as the iodide of potash. No amount of destructive tertiary disease need occasion despondency, so long as the physician is strong in his faith in iodine and expert in his method of using it."

Another note from Dr. Keyes concerning the manageability of syphilis: "My experience leads me to state that syphilis in private practice is a very manageable disease. A patient rarely has more than one full general eruption, and that is the first, during which his treatment has commenced, subsequent ones being of a trifling character, for the tertiary symptoms are very rare. I rarely see iritis, and rarely any loss of the hair. Mucous patches about the mouth, and tongue and throat symptoms are often absent. I am now in the habit of keeping patients under two and one-half or three years' treatment continuously, and then I see them marry and produce healthy children."

What better proof of its curability could there be than the disappearance of symptoms in the individual and the procreation of living, healthy children. Fulfillment of the first and second laws of nature! What more could you ask?

You may conclude that I am optimistic about syphilis. In practice I see many of the worst cases. And I am glad I am an optimist. For the student there is certainly plenty of room and plenty of facts for an all-embracing optimism concerning it. Syphilis is perfectly curable if properly treated. The trouble with syphilis is that many physicians fail to realize its redeeming features. Others fail to recognize its manifold symptoms, while others fail to impress their patients with the necessity of thorough treatment. Add to this the obstinate and ofttimes autocratic and refractory attitude of many patients toward their medical adviser, and you will realize why tertiary and nervous lesions occur. And in the face of stupidity the gods themselves are helpless.

Syphilis and Alcohol.—Syphilization and civilization, in just one word they are the appanages of civilization. Says Dr. Osler: "I often tell the members of the observation class in Johns Hopkins Medical School that they need to know but one disease well, and that disease is syphilis. In mastering it they will grasp a greater range in general and special pathology than in any other affliction."

No; I do not belittle syphilis; I could ill afford to do so; but I do say that I am hopeful of its every case, and that in over 2,000 cases which I have seen I have never yet seen a case whose symptoms did not readily melt away under mercury and the iodide of potassium. Mercury and the iodides! They afford us our only defensive weapons. They are at once our shield and armor; they are the real redeemers and saviors of the syphilitic. Mercury and the iodides! I know no other remedies; I use no other remedies, and in them for me lies the hope, the one hope and the only hope for the cure of syphilis.

The Admissibility of the Syphilitic to Marriage, and Its Results.—There is in medicine no subject so fascinating as the syphilogenic capacity in relation to marriage and the procreation of children. The relations of syphilis with marriage are complex and far-reaching in their results. They involve not only extreme pathological consequences to the individual, but they affect the interests of the family and society. They have social as well as medical aspects.

From a medical point of view their chief importance lies in the fact that syphilis is not only commonly propogated through the relations between the sexes established by marriage, but that the vast, complex and pathological phenomena peculiar to hereditary syphilis, has its almost exclusive origin in the introduction of this disease into marriage.

From a socio-biologic point of view the chief significance of these relations is that syphilis may seriously compromise or entirely defeat the purpose of marriage. The object of matrimony, the essential end and aim of marriage, is the production of children. Society has instituted marriage for the purpose of its own

perpetuation; the civil object is the legalization of sexual relations and the procreation of children.

From the point of view of race perpetuation, syphilis is directly antagonistic to the institution of marriage. The function of marriage is to create life; the action of syphilis is to damage and destroy, to injure or depreciate life.

Even when syphilis does not destroy the product of conception, it transmits to the offspring a defective organism; the infant comes into the world a blighted being, lacking in development and physical stamina, and stamped with inferiority. Syphilis is thus not only a factor of depopulation, but it causes the degeneration of the race, as well.

More technically speaking, we deal with a disease the nature of whose virus is little known, but which most observers agree must be due to a toxine dependent upon a micro-organism recently heralded as a Spirochæte palida. This, however, has not yet been absolutely proven.

The full effect of toxine of syphilis upon procreative functions is inhibitive, and sterility may be the happy result. With a slightly less intensity of the virus a nonviability of the product of conception results, and the fetus is thrown off early, often before the third month. With diminished virulence of the poison or greater vitality of the parents the life in the uterus will be prolonged, and the abortion of a fully formed and diseased child may take place at any period up to full term; but by far the larger number of miscarriages take place at or about the seventh month. With still less of the poison or greater vitality, the child may be born at full term with or without the external manifestation of the disease, later to show manifestations.

Even if brought into the world, this product of syphilitic conception has only a relatively weak hold on life. Seventy per cent. of all syphilitic children die in the first year of life, whether with or without treatment. Varying with the heredo-syphilitic taint in the parent, statistics show a mortality of 28 per cent. from exclusive paternal heredity; 60 per cent. from exclusive maternal heredity, and 70 per cent. from a mixed heredity. In charity hos-

pitals an even greater mortality is recorded, as high as 90 per cent. This falls much lower in private practice, but serves to show the terrible virulence of the poison when working under adverse circumstances or unchecked, and forcibly points to the necessity of the most extreme care in many directions in connection with syphilis and married life.

As such may be enumerated: complete treatment before procreation is attempted; very thorough treatment up to the hour of confinement; early recognition and treatment of the disease in the child, and moreover, a very guarded prognosis in every direction whenever there is any syphilitic element in connection with the case.

Again, apart from a purely practical and utilitarian view of the object of marriage, there is another aspect of the marital relation with syphilis, of importance from a social point of view. The influential motive which prompts men and most women to enter matrimony is the pursuit of happiness. Along with the practical and material side of marriage and the sexual relations, marriage is a pleasurable and highly to be desired relationship. Those who engage in it expect to realize the fruition of their fondest hopes in the intimate association and comradeship which this relation permits.

Now, syphilis, introduced into marriage, often strikes the death-knell of such hopes. It is destructive of the mutual love and esteem which should form the basis of marriage. Syphilis distils a double venom; it poisons not only the health, but the happiness of the household, and carries in its train not only physical woes, but social misery, often disunion, disappointment, disease, divorce, dishonor, disgrace and death.

These pathological consequences and the social misery they engender are by no means the exception or uncommon. They are the natural expression of the disease, the sequence of cause and effect almost inevitable under the conditions created by the marriage relation. Their frequency is far from being appreciated by the laymen, or even the general practitioner. Syphilis wears the protective mantle of shame, secrecy and silence, and its ravages, physical as well as social, are often hid from public view.

To guard against the introduction of syphilis into marriage, and to avert or diminish its effects when already introduced, is the sanitary as well as social and professional duty of the physician. In the sanitary task the physician will find himself constantly confronted by opposing and conflicting interests in his endeavor to dissuade a syphilitic man from a premature marriage. He will encounter the opposition which comes from ignorance of the dangers and nature of his disease; from indifference or callousness; from material or pecuniary interests that would have to be sacrificed; from the embarrassment of retiring from an engagement or the inconvenience of postponing a marriage which has already been arranged for. These and numerous other selfish pretexts will be urged in opposition to the physician's counsel.

Should a syphilitic man marry? In deciding upon the admissibility of the syphilitic to marriage, there are three orders of danger to be considered. First, the contagious risk to the wife; second, hereditary risk to the offspring; and third, the risk to personal health.

The physician's decision, it will be seen, affects not only the interests of the patient, but the interests of the wife and future children, the family, and society. The physician should appreciate the responsibility imposed upon him in being thus constituted the arbiter, so to speak, of many destinies. In pronouncing upon a man's fitness for marriage he should consider it especially as a sanitary problem, in which the danger of infection to others is the chief criterion of his decision.

And in practical parlance when this matter is to be decided by the physician, we turn once more to Fournier, whose dictum laid down a half-century ago still holds true.

"No syphilitic shall marry except that two years have elapsed since the time of his chancre, and that he has had persistent and consistent proper treatment and shows no evidences of the disease."

Time has shown the value of this law in countless instances, and from his judgment then, and augmented by the observations of thousands of others since and now, there is and can be no appeal.

From a study of the relation of venereal diseases with marriage, it will be seen that these diseases, from their nature and mode of propogation, are intimately mingled with the source of life. They affect the dearest interests, the most sacred relations of human society. Their prophylaxis, or prevention, is of the highest social importance. The vitality of the race, the health of the family and its productive energy, are involved in the conservation of the integrity of the functions which these diseases damage or destroy.

Through its instruments of law the State affords to the injured wife the doubtful remedy of separation or divorce, but it does not protect from this injury. The essential condition of the law's intervention is that the injury shall already have been received; the damage already done. This callous indifference may be traced partly to that peculiarity of human nature which accepts the evils of common, everyday occurrence as inevitable and among the established order of things. Then, again, a certain cynical element of society regards the communication of disease in marriage as a matter between husband and wife, with which society has nothing to do. The chief cause of this indifference, however, is ignorance of the significance of these dangers and the extent to which they prevail, and the pathological consequences which ensue.

While it is the husband and father who conveys the infection to his family and who is the responsible cause of the wreckage of the lives of his wife and children, yet all these innocent infections can be traced back to their original source in irregular sexual commerce, known as prostitution. It is evident then that the prophylaxis of venereal disease in marriage can not be considered apart and distinct from the phophylaxis of venereal disease in general. The peril of the family is a part of that vast general venereal peril which so seriously menaces the public health, and which, with alcoholism and tuberculosis, constitute the three great modern plagues that afflict humanity.

The best prophylaxis is not the circumscribing or limiting the spread of these diseases after they have been introduced into marriage, nor yet the preventing of their introduction by postponing marriage until the disease is cured. It is not that we

should intervene, by measures of prohibition, at the last moment, when all arrangements for marriage have been completed. The efficient prophylaxis is to go farther back and prevent the contraction of the disease which renders a man unfit for marriage. It is only by attacking the evil at its fountain-head that its baneful effects upon the individual, the family, and society, can be prevented.

The prophylaxis of venereal disease and the prevention of prostitution are indissolubly linked; we can not disassociate the effect from the cause. It would be foreign to the purpose of this study to undertake the solution of the difficult problem of the social evil, but certain phases of the problem, more especially the measures to be employed for the protecting of the marriage relations from diseases engendered by prostitution, may be considered.

In the first place, it may be positively affirmed that this is not purely a medical question. It is bound up with all the vast and complex interests of our social life. It involves legal and moral and ethical, as well as pathological, questions. This social evil has always been regarded as a corruptive force in society. This irregular intercourse has existed from the beginning of recorded history, and unless man's nature wholly changes (and of this, perhaps, we have no hope), will continue. Irregular relations of the sexes are at variance with the welfare of society, of the young and of the adult, and in every respect the traits of primitive man, physical, moral, emotional, spiritual, all except educational, are tremendous hindrances to normal social evolution. Resisting all attempts at solution, this social evil still remains the great blot upon our civilization, and inextricably involved with it is the question of the prevention of syphilis.

It is, in some of its manifestations at least, a violation of law; it is an offense against morality, and a prolific source of disease. There exists three prime indications in the prevention or eradication of the evil. First: Administrative, employed by the State. Second: Sanitary, by the medical profession. Third: Moral, by the clergy and religious teachers, philosophers and educators.

State Measures.—In medieval times efforts were made to crush

out the evil by force. Largely under the influence of ecclesiastical counsel, backed by the State, the most severe and drastic measures were carried out under the most despotic authority, and almost every conceivable punishment, flogging, branding, shaving the head, banishment and death, were employed—in vain. The experience of centuries has shown that prostitution can not be annihilated by force. In the existing economic and moral conditions of society it seems a necessary evil and the only relief lies in the correction of the conditions of which it is an outgrowth. It is difficult to legislate people into being good; time and numerous instances have shown it to be impossible.

State measure of control have, in every sense of the word, proven a failure.

Moral Measures.—In this country the efforts to combat the social evil have taken the form of moral crusades, which have too often been campaigns of force and violence. From time to time a cry of alarm has been raised at the public peril created by the appalling conditions of vice in cities. The strong arm of the law is invoked; the police are stimulated to enforce the law against certain public manifestations of prostitution. The only effect of these harsh measures is simply to disperse and scatter the evil, which was comparatively isolated in certain quarters. Unfortunately, dissemination is not destruction; it is simply sowing broadcast the seeds. Such crusades may make the evil less flagrant, less scandalous, the streets more orderly and decent, but the volume of vice and disease is not diminished; it is simply divided up and directed into other channels. They make vice more secret, more clandestine, and vastly more dangerous. Let me say here in passing that it is the clandestine prostitute, who is the more dangerous. These emotional waves of excitement, which from time to time sweep over the community, are always of brief duration. Violent measures must always defeat the object in view, because they are of necessity intermittent and spasmodic. Violence is incompatible with the sustained and continuous effort necessary to combat an evil which possesses so many elements of permanence and vitality. Nature, in morals, as in other efforts, simply will not work by extremes.

Failure has been largely written upon all these attempts to suppress prostitution. Some have done a little good; others have done much harm. Experience has amply proven that no legislative force can suppress the evil; that no police or sanitary network is fine enough to serve as a drag-net for the offenders. The attempts made to apprehend the female offender only serve to make her more elusive, and cause her to retreat to inaccessible places. If successful they would subserve no useful purpose, as the equally responsible male factor can not be reached. If every prostitute now living were swept out of existence, it would only act as a temporary check to the spread of venereal diseases. There is an ample supply of infectious material in the males affected to restock a new race, which would be speedily found in obedience to the law of demand which creates the supply.

It is to be noted that in all of these efforts to suppress or control the social evil, the woman has been regarded as the chief offender and the responsible cause. All repressive measures employed by the State to crush out the evil have been directed against the woman. All sanitary regulations to stamp out the diseases incident to vice have been applied only to the woman. All moral crusades to purify the social atmosphere have been directed against the woman alone. They have culminated in descents upon houses of prostitution; the impounded women are fined or sent to the workhouse; while their equally guilty male partners are allowed to go scot-free. This unilaterality or onesidedness of repressive, sanitary, and preventive measures is opposed to the principles of justice and equity, as it attacks only one factor in the spread of vice and disease. Society, by holding the female offender against morality alone guilty, propagates the false idea that there is a different standard of morality for men and women. These measures have all failed because they deal only with effects, while the causes remain untouched.

We come, then, finally, to the unavoidable conclusion that there are really open to us practically only two or three ways by which the spread of syphilis may be limited. First and foremost, the education of the public as to the nature of the disease, the method

of its communication, and the symptoms which indicate its existence and its onset. Then, if the prostitutes themselves shall be thoroughly instructed in the symptoms of the disease, so that they may be able by inspection to detect the disease in themselves and in those who visit them, a great deal more will have been done to prevent its spread.

If those indulging in impure intercourse shall be thoroughly instructed in the proper antiseptic measures to be taken on such occasions where they have rendered themselves liable to contamination, a great deal more will be done, and when we have hospitals and clinics established for those suffering from venereal disease, especially women, where they may receive careful, humane treatment, so that instead of being repelled by harshness and by fear of punishment, they will be drawn to seek help and curative treatment, still a great deal more will have been done in this direction.

"Personal purity" says Dr. Osler, "is a prophylaxis which we, as physicians, are especially bound to advocate. Continence may be a hard condition, to some harder than others; but it can be borne, and it is our duty to urge this lesson upon the young and old who seek our advice in matters sexual. Certainly it is better, as St. Paul says, 'to marry than burn,' but if the former is not feasible there are other altars than those of Venus or Bacchus at which a young man may light his fires. He may practice at least two of the five means by which, as the physician Rondibils counseled Panurge, carnal concupiscence may be cooled and quelled—hard work of body and of mind." Idleness is the mother of luxury, and a young man will find absorption in any pursuit will do much to cool his passions, which, through natural and proper treatment, in the exigencies of our present civilization can not always obtain natural, proper and efficient gratification.

What, then, is the hope in social prophylaxis of syphilis? It is this: that we train our young men to higher ideals of women and marriage; that we remove the ideas of false modesty and prudery in regard to matters sexual existing among our young women; that we protect the innocent; that we guard the unwary; that we expose the infamous; that we have charity for the unfortunate, and alms

and pity for the diseased and suffering; that we educate instead of legislate; that we cure instead of scold; that we pray instead of scoff. And when the moment shall be generally conceded that our Anglo-Saxon prudery and civilization shall not inhibit or prevent general discussion of these matters; when papers similar to this may be given without question, without exciting the jealousy and envy of other professional men, and when general knowledge of the far-reaching disasters of venereal disease can be inculcated into the minds of the laity; then, and not until then, in my judgment, will there be any relief, any suppression, any let-up in the category of venereal tragedies. In a word, the only hope is education.

Let this, then, be our creed—let education be our watchword. For it is the hope, the main hope, the greatest hope in the social prophylaxis of syphilis—the disease ever in our midst.

Education on broad and open lines alone can lead us in the path of safety. Science—nature learned through the language of experience—alone can touch our reason, can ennoble our sentiment, can modify our emotion, can quell our passion, can remove us from the blight and bane of this social tragedy and make us noble, make us good, and make us free.

"THE FEMALE PROSTATE;" AN ANATOMICO-SURGICAL STUDY.

BY CHARLES E. BARNETT, M. D., FORT WAYNE, IND.

From the hypothesis that the prostate in the male arises as two separate glands, which are developments of the lining membrane of the first part of the urethra, instead of the Müllerian duct coalescence embryologic idea, gives the female the opportunity for a like glandular development. So in order to call a closer attention to the subject of the deep urethral glands of the female, I have called them in the title of this paper the "Female Prostate."

In substantiation of the claim "that the male prostate has an entirely distinct and different origin from that of the utriculus masculinus," and thus allowing in the writer's opinion the analogy between the male prostate and the female deep urethral (Skene's) glands, the following points in embryology are offered as evidence:

"In the male the utriculus masculinus, the coalesced Müllerian ducts, enters the back of the first part of the urethra, the urogenital sinus, in the middle of the line, and the vasa deferentia, the Wolffian ducts, terminate in the edge of the orifice of the utricle on either side.

"In the female the vagina, the coalesced Müllerian ducts, enters the back of the vestibule, the urogenital sinus, in the middle line, and the ducts of Gärtner, the Wolffian ducts, terminate in the lower part of the vagina on either side.

"The homology between the male prostatic utricle and the female uterus and vagina is a demonstrable fact.

"The male prostatic utricle and the female uterus and vagina have an origin distinct and different from that of the urogenital sinus.

"The prostate glands are developed in the wall of the genito-urinary sinus, at a point farther from the bladder than the open-

ing of the utricle. They are apparently mucous glands of the urogenital sinus, and they consist in the fourth month of a few branching columns of cells which cluster together at the back of the urethra where they are seen in two separate masses, one on each side of the middle line. At this stage they are entirely within the layer of voluntary muscle of the urethral wall and do not form any visible projection. In the ninth month they are larger, more fully developed, and form visible projections; *they are two separate and distinct glands* and have grown beyond the limits of the external wall of the urethra."—Richardson.

It would seem from a study in comparative anatomy that the prostate gland, Cowper's glands, and the vesiculae seminales or glands, furnish the culture media for the sperm cell in the male.

Would it be straining a point too far to consider the female accessory glands, viz., the deep urethral, Bartholine* and Nabothian glands as secreting a still further culture media for the spermatozoa,** active if the male is passive and performing a greater function than a mere lubricant during coitus? (Piersal finds glandular tissue in the vesiculae seminales.)

It is claimed as an undoubted fact that we have "the orgasm with discharge of semen in the male and the orgasm and reception of semen in the female."—(Lydston.)

The smaller mucous glands in the male are pouring out their fluid during the exciting stage of passion, we will say for the purpose of lubrication, but not so with the larger ones until the orgasm occurs. From the limited investigation that the writer has been able to make there is a like functuation condition present in the female, with the difference that the simple mucous primary flow is greater than in the male and the secondary special flow with the orgasm is not so profuse.

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*The comparison between Cowper's glands and the glands of Bartholine is permissible. They both lie just below the bulb, within the triangular ligament; upon the levator ani or constrictor urethra muscle, as it is called, in this region. Their size and the lengths of the ducts are practically the same.

**Stohr's Histology, fifth edition, says: "In this mixture of fluids (*i. e.*, spermatozoa plus vesicular, prostatic and Cowper's gland fluid) the motions may continue for from twenty-four to forty-eight hours after death, and for a still longer period in the secretions of the female genitalia. * * * Acids suspend motion while animal fluids of alkaline reaction restore motion." This would tend to show that there is a secondary flow in the female that is sufficiently alkaline to neutralize the ordinary acid vaginal mucus.

Observations on the chemistry of semen have been so few and fragmentary in character that the writer was not surprised not to be able, after considerable search, to gain any information relative to the chemistry or physiology of the female accessory-glandular fluid.

The study of the anatomy of the bladder and bladder appendages has never been more active than today and it is not impossible that some things have been overlooked by our older anatomists, on account of their nonimportance heretofore.

The new anatomies are giving the deep urethral glands of the female a passing notice, while the older ones are silent on that subject. Our recent works on the surgery of the urogenital tract of the female are further advanced even than the more recent anatomies in their anatomic description. This shows that the subject courts further investigation.

The writer has found, after having made a number of female bladder dissections—the last ones being made in Weichselbaum's Pathologic Laboratory in Vienna—that the deep urethral glands of the female were located midway between the neck of the bladder and the meatus urinarus externus; placed laterally to the urethra, above the vessicovaginal fascia and having ducts which empty just internal to the external meatus. When hypertrophic, the gland encroached upon the bladder neck. The changes in shape during hypertrophy are similar to the male prostate during its outcroppings of lobules. (See cut.)

In the majority of gonorrheas of the female the urethra is invaded. During this urethritis the deep urethral glands are constantly in danger. Should they become infected the pathology present is much similar to gonorrheal prostatitis in the male. Should pus form and the abscess break the solution of continuity will either be toward the urethra or toward the vagina. Should the vaginal route be taken, there is a great danger of an urethro-vaginal fistula, which is practically a vesico-vaginal fistula.

The vesico-vaginal fascia is so thin and so lacking in tone quality that an abscess penetration of it is effected with no great effort. Should the urethra remain competent the drainage opening will

close and the abscess will reform ad libitum until surgical help is given. Should this infection be not sufficiently virulent to produce a breaking down of the tissues, there will remain a passive inflammation that by the stimulating effect within the ascinus, will produce an hypertrophy of the glands. (See writer's article on Pathological Changes Resulting From Prostatic Enlargement.—American Medicine. April 8, '05.)

The usual case comes late to the surgeon. Should there be sufficient time to abort suppuration, the best procedure in the writer's opinion is to slit the ducts to the glands and cauterize the field with silver nitrate. If suppuration is present, the abscess should be opened from the vaginal side and properly drained. After resolution has taken place if any glandular remnants remain, they should be taken away during the interval between the inflammatory crises, thus giving the operator a chance to avoid urethro-vaginal fistula. In case of urethro-glandular fistula, cauterization of the fistulous tract and abscess cavity should be done, followed by an interval operation if possible after the urethra has healed. In vesico-vaginal fistula a plastic operation with the removal of all glandular remnants is indicated.

In all of these cases the bladder neck will be found inflamed and will need attention.

The writer sees no reason why hypertrophy should need surgical attention unless it would happen to be like the case illustrated. Even with that condition present, the Fenwick operation with the large urethral specula for the removal of papilomatous growths in the bladder, could be utilized for the removal of the glandular lobule.

The report of three cases will give an idea of the kind of cases encountered by the surgeon due to inflammation of these glands.

Case 1. Mrs. X. Operated by the writer several years ago for kidney stone, with recovery. About a year following operation she was infected by her husband with gonorrhea. On account of her innocence and unsuspecting disposition the writer was called late, and consequently got the sequela of the disease, which in this case was an acute adenitis of the deep urethral glands. Under

treatment the inflammation subsided to a marked degree, leaving a passive inflammation with tenderness and some enlargement in that region. An operation for the removal of the glands was suggested, which was declined by the patient. The fact is the patient is not aware of the cause of her trouble and, unfortunately for the writer, considers that it is a remnant of her old kidney trouble.

Case 2. In consultation Miss Y was examined. She gave a history of acute inflammation at the neck of the bladder, but emphatically denied gonorrheal infection. She was ordered to the hospital where a vaginal examination was made, at which time a slide was smeared with pus milked from the deep urethral glands. The pus contained Niserian diplococci; a cystoscopy was done the next day; neck of the bladder found highly congested; bladder washed and neck painted with silver nitrate; ducts of glands slit and cauterized with silver nitrate. Two weeks after leaving the hospital there was a recurrence of the adenitis, with suppuration. A cutting operation for drainage followed by the removal of the glands during interval, was suggested; said suggestion caused the discharge of both the attending physician and the writer. From our hands she landed in the hands of a thoroughly competent practitioner, who called in a surgeon, who was also thoroughly competent, but they failed to find the true cause of the trouble, and from these men, the patient has drifted until finally, on account of their hopeful promises, she has been attracted to the Osteopaths and the Christian Scientists. As this disease is entirely out of their sphere, the writer would not be surprised at no distant date to have the patient return for the surgical relief that was advised in the beginning.

Case 3. Was called to Detroit to see Mrs. Z. Gave history of infection of deep urethral glands seven years ago which was followed with abscess formation. Vesico-vaginal fistula followed the breaking of the abscess, leaving an opening larger than would admit one finger. She had been operated, for the closing of the fistula, five or six times by competent surgeons with negative results.

The writer proposes, in endeavoring to close the fistula, in this

case, to do a suprapubic cystotomy in two sittings: After cleaning the bladder thoroughly, to freshen the edges of the fistula, close the same tightly with chromocised catgut, then cover over the whole fistulous region with a flap composed principally of the bulb of the vagina (patient being put to bed, lying on her abdomen, in order to drain the urine away from the wound). Should the closure be complete a urethral canal will be tunneled at another sitting.

DISCUSSION OF THE PAPERS OF DRS. WADSWORTH, BRAYTON AND BARNETT.

Dr. Goethe Link, of Indianapolis: These papers have been very interesting, and as the subject of syphilis is now especially under discussion on the part of two classes of investigators, the pathologists and the sociologists, I would like to say a few words in regard to this subject. First, with Dr. Wadsworth, I feel that the initial lession is a very uncertain quantity. No one can tell, no one knows enough about this disease to tell a chancre when they see it. We find that out by experience. They are typical sometimes and sometimes not, and later we find that sores we took to be typical were not malignant at all. Acting on this knowledge I want to say that this is one of the most mistreated troubles with which man suffers. Patients come to us every day whose venereal sores have been cauterized. And right here I wish to say that cauterization has no place in the treatment of any venereal sore. You can not depend upon any one symptom. The authorities tell us the initial sore is not painful. I have had two recent cases that were very painful. It is to be hoped that by next time this association meets we can speak of the organism, the *Spirochæte pallida*, as the cause of syphilis, and this will bring us good immediately. It will at once clear up the diagnosis when we can as readily as in gonorrhea stain the organism and make the diagnosis on the spot. I agree with Dr. Wadsworth that the treatment should begin at once. It gives the patient something he very much desires, the lessening of the secondaries. Dr. Brayton is an optimist, and it is

well that we have an optimist—to whom we might go should we become infected in the performance of our professional duties. But we might do our patients injury if we were all optimists. When I get through talking to a patient with a venereal disease I have come nearer making an exemplary young man of him than all the preachers in Indiana; this, to make him take the treatment and comply with all the conditions for from two to four years. The pathologists and the sociologists are working diligently, the sociologists along the line of education. This should reach the young man before he has started to college, while finishing his high school course. Before he has passed sixteen he should be taught not only the dangers awaiting him, but how to prevent them when he is performing a physiological function that he will perform in spite of everything we can do to prevent him. As to the regulation of prostitution, in my opinion with the unnatural conditions prevalent in society, the prostitute is performing a duty which we can not do away with, and so the time must come when she must be recognized and controlled by the State. Authorities show us that clandestine prostitution is that from which we expect disease, and we must look the situation in the face and deal with it.

Dr. F. R. Charlton, of Indianapolis: I want to differ in a thoroughly good natured way with Dr. Wadsworth. In the course of his paper he takes occasion to take a fling at dividing syphilis into stages. Of course that is an arbitrary division and no one ever considered it in any other way, just as we speak of the period of infancy, of childhood and of old age. The individual does not change. He does not become another individual, but he passes through entirely different periods, manifested in an entirely different way. And so in syphilis. We have no condition medical or surgical that has more clearly defined stages. They are manifested in entirely different ways. They involve different tissues and must be handled in different ways. It is purely a matter of expediency in treatment to consider it by stages. I do not treat it before I see the secondary development. It is a mistake. It is worse than that. It is pernicious. If there is a moral obligation upon the doctor at any time it is in the pronouncement of syphilis on a man.

There can not be any greater obligation than to say to a man or a woman, "You have syphilis." I do not want to have any doubt. I want to know the worst or be entirely free from it. No man can diagnose syphilis on the primary lesion. Any one who takes a positive stand simply commits himself to a lack of experience. It is very easy to cast up a differentiation in tables, as is done in the text-books very beautifully—on this side you have one thing and on that something else. You might as well throw it in the waste basket. We speak of induration and no induration, of pain and lack of pain, and a host of things, and get mixed up in the handling of your case. For instance, you have a lesion on the glans penis itself. You do not have induration. Why? For the simple reason that you have no subcutaneous tissue here, and if you wait to diagnose your case on the induration, you get left. If this is true then there is the argument against putting your patient on constitutional treatment right away. I have in mind a man who conducts one of the largest clinics in New York—a gallery player—who has his patients come in in a long line. He spends a minute at the outside on each case and says, "Gentlemen, this is syphilis," and he sends the man along into the next room and the treatment is carried out on that diagnosis. It is criminal. If your patient has syphilis he is going to be put on a course of treatment that is indeterminate; not a flat two years; no one claims that. In one it may be two years, or six months, and in another not at all, and in another it may be four years. It is a question of long treatment, and you must properly impress your patient and he will take the treatment as long as you say. The treatment must be adapted to the patient. In the first place you must convince him that he has syphilis. Suppose you pronounce on the sore. You may be right, but you never know whether you are right. Suppose he starts in on the mercurial treatment. Nine times out of ten he will see nothing else. Suppose he takes it six or eight months. Human nature is the same all the world over. After awhile he begins to doubt whether he had anything the matter with him. He meets his friends who tell him they have had sores of that kind and that there is nothing the matter with him, and after a short while he

will make up his mind that the doctor was wrong and he will quit the treatment, and later on he will develop locomotor ataxia and dementia and the parasyphilitic affections, and it all may be laid to the doctor who has pronounced the diagnosis on the primary lesion.

Dr. A. C. Kimberlin, of Indianapolis: A word as to the treatment. Certainly it is a matter of such gravity that we ought to be pretty well agreed. One remark of Dr. Wadsworth attracted my attention, that the patients themselves are especially solicitous and anxious about beginning treatment. This is invariably true and constitutes a great danger. The man who has erred has often a very uncontrollable temperament and disposition. It is a very great mistake to cover over what he considers as a very serious omission. The appearance of the secondary symptoms will exert an influence over the mind of the patient. Surely that patient is much better if be himself is made a party to a decision of the character of his trouble. As Dr. Charlton has said, you can not by the sore alone diagnose syphilis. You have to wait for the secondary conditions before you are sure. If they are present the patient becomes a party to the treatment and becomes a better patient and will pay you a good fee. The ill effects of syphilis are not that it affects the patient alone, but because of the subsequent dangers, the distant dangers. You do not know what home he goes into, and so we see it manifested where we least expect it. And it is these cases treated heroically early and which escape a proper course of treatment that are infinitely the worst. We know that patients who have mild secondary symptoms have severe tertiary lesions. How often do we see it in women and in men who deny a history of syphilis absolutely, yet they come to us in an advanced stage, with degenerative changes which they might have escaped had they known they were infected. I think certainly with Dr. Charlton that this is a matter of very great gravity and one by all odds more important to treat, because, as Dr. Brayton has shown, the plan is simple. But certainly to begin to carry out vigorous treatment places very great responsibility upon the doctor and his patient.

Dr. W. W. Wadsworth, Muncie: The chief purpose of the paper has been attained in the splendid discussion it has received. It was not with the hope of shedding any new light upon the treatment of lues that the paper was offered, but rather of raising certain questions for discussion. However, after listening to the arguments pro and con, I am more firmly convinced that the contention of the paper is right. That the time to begin the treatment of any constitutional disease, which must be recognized as constitutional from its incipiency, is at once the diagnosis is positive.

No physician can intelligently treat any disease until he knows what he is treating. But as soon as diagnosis is made in syphilis, treatment is indicated. And constitutional treatment is the only treatment. And when a physician has presented a lesion with the characteristic induration and adenopathy following the classical period of an incubation, so called, and fails in diagnosis, either his judgment or eyesight is in error. Having made the diagnosis there is neither reason nor justification in withholding treatment.

The argument in favor of delay pending the explosive phenomena of a so-called "secondary" is crude and untenable. And it has been my observation that the exponents of this contention generally controvert their history by their practice.

The value of vaccine and antitoxin as prophylactic measures in variola and diphtheria has been demonstrated beyond question or cavil. And if prophylaxis by immunity is tenable in those infections why not in syphilis? I believe as we advance in syphilography we will come to recognize that an individual has not been sinned against who has been treated for syphilis following an exposure even before the infection developed.

The analogy between the evolution of the child and syphilis is farfetched and illtimed. In fact there is no analogy. One is a purely physiological process and the other pathological. The evolution of the child is attended by certain functional phenomena marking its stage of development, contradistinguishing childhood, adolescence and maturity. This is not arbitrary. However, the classification of a disease process which is constant and unchanging, into periods, stages, etc., is purely arbitrary.

The charge of lack of experience of the author as evidenced in the contention of the paper must apply also to Hyde, Hutchinson, Martin, et al. And the eminent gentlemen there, who so strongly differ from those hitherto recognized authorities, whom I choose to follow, may make it necessary for these authors to revise their contributions upon lues, until which time, however, I prefer the company of such men as Hyde, Hutchinson, Martin, Tyson and the many others who have done so much for advanced syphilography.

Dr. N. D. Brayton, of Indianapolis: I apologize in part for not having prepared a technical paper for the Association. It is interesting to go into the history of the great diseases. As regards one of the points Dr. Wadsworth took up, namely, the period to institute treatment, I regret to say that I can not agree with Hutchinson, Dr. Wadsworth and Dr. Link; namely, that we should begin the treatment as soon as we make the diagnosis. I congratulate the Association on the plea Dr. Charlton made for delay in the administration of mercury. I do not hesitate to state that no time is lost by waiting. We have plenty of time and the sole idea is not for the doctor to make the diagnosis and treat the patient. That is not the greatest thing. We should impress upon the patient that he has one of the great diseases, the most persistent and insidious attacking men, and therefore he must take his treatment for the required period, which is somewhere between three and four years. As regards potassium iodide, I have outlived the time when I gave it in extremely large doses. I no longer give thirty grains, unless in gummatous conditions. With it I also give mercury, even in old cases—one-twelfth of the bichloride and ten to fifteen grains of the iodide of potassium. I think we do better with these severe tertiary lesions by moderate doses, gradually increased as the symptoms may demand.

As regards the question of the regulation of prostitution, which is of course mingled in the question of syphilis, I do not agree with Dr. Link's idea that the State should take it up. State measures have never been remedial. It has proven a failure in Paris, in Berlin, and wherever it has been tried. The question of the prevention of venereal diseases in prostitutes is a question of educat-

ing them in the symptoms of the disease and taking care of themselves until they get well. If you encourage State measures you encourage clandestine prostitution, which is vastly more dangerous than the ordinary form.

Somebody should be an optimist. There is plenty of room for optimism. The great trouble about syphilis is that many physicians are not optimistic; they fail to recognize how quickly they can obtain results with proper treatment and do not impress upon patients the gravity of the condition. The reason we see severe nervous manifestations, the parasyphilides, is not the fault of the disease entirely; it is the fault of the doctors in large part.

Dr. Charles E. Barnett, of Ft. Wayne: My paper was not discussed. I think it was misplaced. It should have been placed with the syphilitic papers to have been interesting just now.

The consensus of our best writers on syphilis in regard to a diagnosis is that if you find a true Hunterian chancre, giving the proper days of incubation, and you are reasonably sure that it is syphilis, then it is time to begin the treatment. While you have the same pathology on the skin that you have in the chancre, if we can prevent the skin lesions we have done right in the treatment. Now if you are not sure that you have a Hunterian chancre the only way to do is to leave it go until you are sure, and any one who would make a diagnosis before that time is in error, and is mistreating his patient by either giving medicine unnecessarily or not treating him scientifically.

Dr. Whitfield Bower, of Michigan City: There is one point in the treatment of syphilis I was hoping would be brought out in the final discussion by the writers, and that is for the sake of the patient, to prevent these severe after symptoms, so distressing and sometimes fatal. I believe it is wise, and it has been my practice, to advise patients to yield to treatment and take the prescribed course, and follow it up each year as long as they live with at least one visit to the physician and undergo a short period of treatment. I believe it is worth while to the patient.

PUERPERAL CONVULSIONS AND THEIR MANAGEMENT.

BY GEORGE ROWLAND, M. D., COVINGTON, IND.

Perhaps there is no other affliction that brings such terror and consternation in the household, than the convulsions of an expectant mother, giving birth to her offspring. To the sentimentalist, who gazes upon such scenes, and wishes to indulge his fancies, this is a fruitful source, to gratify his sensibilities. It is here that the attending physician is, or should be, master of the situation. I shall not undertake here, for the want of time, to discuss preventive measures.

I do not know that I can tell you anything that you do not already know, but it is on occasions like this, that it is very proper to discuss the subject of puerperal convulsions, and present all the favorable and adverse considerations.

What is the cause of puerperal convulsions? I may just as well frankly tell you, that I do not know.

To enumerate all the alleged causes would probably weary your patience, but let us mention some of them.

Physiologic strain upon the kidneys has been mentioned. Albuminuria is another alleged cause. The combined extrarenal cause and albuminuria is mentioned.

The several causal factors working singly or together have been mentioned. The end-product of metabolism is mentioned with strong argument, while it is asserted with equally strong argument, that such is not the cause.

The nervous systems of pregnant women are abnormally sensitive, and it is alleged that is the channel through which a toxin or toxins produce convulsions.

It has been shown that the muscles of pregnant guinea-pigs can be thrown into convulsions more easily than those of nonpregnant animals.

It has long been known that the pregnant mare and female dog have convulsions analogous in character to that of the human female. But the comparison of experiments upon animals, with the probable results of such upon the human female, always carries with it the possibility of a doubt, but we should give them proper consideration.

The placenta has been pointed to as the place where toxic substances are formed which produce such disaster, and that the placentæ of eclamptic cases are pathologic.

It has been claimed that the blood of the fetus in eclampsia has a hemolytic action upon the maternal blood, that is to say, a substance is in the fetal blood capable of dissolving out the hemoglobin of the red cells of the maternal blood, and thus destroying them.

It is claimed that the serum emulsion from the dried placentæ of eclamptics, will produce death in animals, into whom it has been injected, while the serum from normal placentæ, made in the same manner is harmless.

It is claimed that the blood in pregnancy is more toxic than the blood in the nonpregnant female, and that the toxicity is further increased by the puerperal convulsions.

It has been alleged that all attempts to show an increased toxicity of the urine in pregnancy and in puerperal convulsions have not been convincing.

It is well known how frequent albumen has been found in normal pregnancy, and in those with convulsions. It is no doubt true there is an abnormal strain upon the kidneys during pregnancy, and much more so during convulsions. The occurrence of albumen so constant and in large amounts with convulsions, suggests a dependence of both on a common cause. It has been shown that the death of the fetus in utero has stopped a marked albuminuria.

Casts are found more frequently in the urine of multiparæ than in primifaræ, which is a strong argument against the kidney origin of the convulsion poison, because more than 20 percentum of the cases of puerperal convulsions occur in women giving birth

to their firstborn, and where the prior kidney condition is more favorable.

The theory on which eclampsia was first held to be dependent on kidney disease was the association of albumen with the attacks and the similarity to uremic convulsions in the nonpregnant patient.

The truth is, albuminuria is nearly the regular rule in normal pregnancy, and more particularly at the time when convulsions are expected to occur, and even severe nephritis and extreme albuminuria does occur commonly without any signs of puerperal convulsions.

This albuminuria conception of eclampsia was long ago given as an explanation that the kidney insufficiency, with retention of toxic waste products, was the cause of all the trouble.

We know that urea forms a large part of the tissue waste, and that was naturally held the first and most prominent toxic agent.

What is uremia? It is defined to be the presence of urinary constituents in the blood due to suppression of the secretion of the urine and marked by headache, nausea, vertigo, eclampsia and a peculiar odor of the skin.

Now, then, if uremia is due to insufficient secretion of urine and the retention in the blood and tissues of excrementitious urinary bodies, then complete anuria should always produce uremia, and the blood of uremic patients should always show an increase, and the urine a corresponding decrease of urinary substances, which it does not do.

A qualitative and quantitative analytic study of the excrementitious urinary bodies, therefore, proves nothing as to the causes of uremia.

It is well known that in uremia the urea secretion is often decreased, and when this occurs, it is generally believed to be retained. If its elimination is merely interfered with, it should always be correspondingly increased in the blood, which is not the case, and the reasonable probability is, without positive proof, the decreased secretion of urinary products is not so much due to retention in the blood as it is to its nonformation in the system.

The kidneys act as a filter for the system. In a normal condition it selects that which should be expelled and is in a condition to retain that which is important for the organism.

When the kidneys are diseased the filter leaks, organized material that could furnish heat and energy for the organism are rapidly wasted, such as the peptones and albumen.

It is well known that an acute congested or inflamed kidney is less permeable than a normal kidney for a variety of circulating bodies to be excreted and on the other hand more permeable than normal for certain other bodies, and for what reason I do not know.

This leads us to albuminuria; and first, what is albuminuria? It has always been considered an accident of bad repute in all diseases of the kidneys, and physicians generally have always attached extreme importance to it.

It is possible that we do attach too much importance to it? The kidneys can eliminate substances which they ought to retain, two of which are the peptones and albumen.

While the diseased kidney is secreting something it ought to retain and still useful to the organism, it will or perhaps will not allow the passage of other compounds that have outlived their usefulness, which are dead, a mere ash, and which should be excreted from the system.

It has been asserted that the resisting power, or individual tolerance, has been lessened in those afflicted with eclampsia.

Too much water in the system has been asserted as a cause for puerperal convulsions.

The over or under alkalinity of the blood has been asserted as a cause.

A strong appetite with too much rich food has been claimed as a cause. "Women in pregnancy are much inclined to accumulate much flesh, and when constructive metabolism is in excess of destructive metabolism, toxemia and plethora are simultaneously present."

Pressure of the heavy womb and its contents upon the kidneys and ureters are assigned as causes.

Puerperal convulsions have been claimed to be due to an acid intoxication of the blood which should be normally alkaline in reaction.

It has been asserted that the probable cause is due to a poison of microbic origin.

It can thus be seen that these bodies of ours are great laboratories of poisons, and that we are constantly being in danger of being poisoned by our own poisons, and running on to our own destruction.

The distinguished French Bouchard, has thrown much light on the subject of auto-intoxication by the thousands of his experiments on animals.

These experiments consisted of the injections of a fixed quantity of urine of an animal into its own veins, and results noted, but the precaution was taken to neutralize the normal acid urine to be injected into the normal alkaline blood.

Injections of urine of one species into the veins of another species and noted.

Injections of urine from an animal during sleep, as compared with the urine during the wakeful period.

Injections of urine from an animal during rest, as compared with that of violent exercise.

Injections of urine from an animal living in foul air, as compared with that of urine from an animal in the pure, open air.

From all such experiments he obtained very valuable data, which are too voluminous to be considered in this paper.

He evaporated certain quantities of urine to dryness, thus securing all the solid constituents in dry powder form. Of this dry powder he dissolved in absolute alcohol. But certain quantities of the solid constituents of urine are not soluble in alcohol, and this portion he secured in dry powder form.

Then that portion which was soluble in alcohol he secured by evaporating the alcohol, and by this procedure he secured two solid extracts from urine, one soluble in alcohol, and one insoluble in alcohol. Then, taking one of these extracts and dissolving in pure, distilled water, and dissolving the other extract in the same man-

ner, he thus secured two aqueous solutions, and each of them showed toxic properties, when injected into the veins of animals, but they produced different results. The toxicity of each of the extracts is less than that of the whole urine.

The solution of extract soluble in alcohol produces sleep, deep coma and diuresis, and a new symptom is caused, namely, salivation, which will last three-fourths of an hour and equal to that produced by jaborandi.

Here is a fact which is not explainable and that is, how can one part of the urine produce what the aggregate can not do? Again, the solution of the extract insoluble in alcohol, produces contraction of the pupil. Just like normal urine will do, and this same extract in solution injected into an animal will produce convulsions, which never occur from the extract soluble in alcohol. This is important to remember.

Let us pursue this question further. What is it in this substance, that is insoluble in alcohol, that produces convulsions?

It has been found that certain substances of the urine will produce contraction of the pupil. Another substance will produce coma, another substance will reduce heat of the body, and another substance will produce salivation.

It has also been found that the extract of urine, which is insoluble in alcohol, will produce convulsions, but when that extract is decolorized with animal charcoal, it will not produce convulsions, which leads us to believe that the subtsance of the urine producing convulsions exists in the coloring matter of the urine.

It can be readily seen by this discussion, that there is a vast and an unexplored field of labor, which it will take future ages to complete.

We have only begun to examine the question. We are now only on the threshold of discoveries which are yet to be made by future labor.

What is the reasonable course to pursue in a case of puerperal convulsions? We know these convulsions occur during pregnancy, during labor, and subsequent thereto.

In a case of convulsions at or prior to the seventh month of

pregnancy, we are not justifiable under any circumstances to remove the living fetus from the mother's womb.

Subsequent to the seventh month of pregnancy, when the fetus is presumed to be viable, it is then permissible to remove the fetus, if all the conditions are favorable. The life of the child in eclampsia is endangered after each succeeding attack, rarely persisting after the fourth or fifth convulsion.

It must be constantly kept in mind that the precise pathological nature of puerperal convulsions has not been determined, and in the absence of such knowledge the administration of drugs alone is of very doubtful utility.

Whatever the cause may be, it is reasonable to consider it to be a tangible something, a toxic substance, a poison, not perceptible to our senses, generated within the pregnant female, and producing a morbid or deadly effect. We are familiar with numerous medicinal poisons and their effects, and it is useless here to enumerate the methods to relieve the patient.

In puerperal convulsions, we read and hear much about giving chloroform. From a strictly scientific point of view, why should chloroform be given? It does prolong the interval between the spasms. It does apparently soothe the patient into a quiet slumber. It does quiet the numerous excited friends of the patient, who are always in attendance on such occasions. But getting to the question, what does the chloroform do? It does not remove the cause that produces the convulsions. It simply allays the alarm temporarily. It simply locks up the toxic substance for a time, to break forth anew. Chloroform simply paralyzes the organizism to such degree, overwhelms the brain centers to such extent, that convulsive attacks are only prolonged. That part of the system that is convulsed is simply paralyzed under the anesthetic, and he who administers such is laboring under a deception. It has been alleged that convulsions were successfully checked, after the first convulsion, by chloroform, but the probability is the patient would not have had but one convulsion, as is sometimes the case when no chloroform is given.

The truth is, chloroform does not always control puerperal convulsions.

The fluid extract veratrum viride, is given in heroic doses, until the pulse is brought below normal. This is an old-time remedy, but keeping in mind the absence of our knowledge of the true nature of the convulsions, how can we expect good results from such a powerful depressant. Is it rational to depress the heart's action with veratrum? For all we know, it may be one of nature's efforts to expel the poison from the system by a rapid pulse. I regard veratrum as a dangerous remedy, and it does not remove the cause of trouble.

Morphine is given and lauded to the extreme by some practitioners. How can this powerful drug benefit the patient, who is already under the influence of a toxin producing coma? It does not remove the cause. It does temporarily allay the symptoms and widens the intervals of spasms. It is possible to profoundly narcotize the patient to such degree that spasms are prevented.

When a five-year old boy is seized with convulsions in August, after eating green apples, the physician would not think of chloroform, veratrum or opium.

Profuse perspiration is mentioned, but it does not remove the cause. It does not remove any toxic substance. All that it removes from the patient is water. A convulsive patient should quickly be placed in a hot bath, not that it removes the poisons, but it drives the great volume of blood to the surface, and with this blood, the toxic substances are brought with it, far away from the nervous centers, and there stored up in every cell of the soft tissues, out of harm's way. It gives the patient a breathing spell temporarily.

It would be unwise, at this point, to give the patient active saline cathartics, for the reason that would rapidly remove water from the system, and along with this water, the toxins would be brought with it, into the circulation, but unfortunately a very small percentum of toxins are removed by the bowels. It should be remembered the bowels do remove toxins, but the question is, are the toxins removed from the bowels which produce convulsions. More probably the kidneys remove such toxins, but that is too slow a method.

It is very prudent to give active cathartics, enemas and hot baths, but they should be given in the early period of the illness.

But the greatest and best and most permanent of all remedies in puerperal convulsions is bloodletting. A venesection of the median-cephalic vein.

I speak from knowledge and long personal observation and experience. I never saw a woman in puerperal convulsions but that bloodletting was indicated. I never saw a woman in convulsions, who previously had a poor supply of food and poor environments. I have always noticed these cases to be well-fed with rich food and inactivity and surrounded with luxuries. In venesection we have the most speedy and permanent of all remedies. We rapidly remove toxins direct from the economy. It is too slow a method by the kidneys, bowels and skin. If the kidneys are impermeable to the convulsion toxins, it is very probable they are impermeable to the active drugs often given. Bloodletting rapidly reduces the quantity of active toxins producing convulsions.

The quantity of blood in the human body is about 1-13 of the body weight, and from this amount $\frac{1}{3}$ can be quickly and safely taken, and the safety can be doubly insured by the subcutaneous injection of normal salt solution.

It has been computed that for every ounce of blood we remove, we take as much extractive matter from the blood, as nine ounces of liquid diarrhea would do, or as much as 100 quarts of perspiration.

If you ask me how much blood to remove, I would answer as Dr. J. T. McShane, of Indianapolis, answered (in a paper published in the Journal of the American Medical Association, February 29, 1896), "you are on a life-saving mission; do your duty fearlessly, and bleed for effect and not for ounces of blood."

I know full well that venesection is less resorted to than it should be. I have met many physicians who do not resort to it and depend mainly on medication. I have met physicians who never witnessed venesection.

But the good results of bloodletting in puerperal convulsions have stood the test and been the experience of the past ages, and I

assure you that I am happy to see it frequently mentioned in the medical literature in this the dawn of our new century, and its usefulness urged upon the medical profession.

DISCUSSION.

Dr. Squires, of Churubusco: It has been my experience, gentlemen, to wait upon a few cases of puerperal eclampsia, and without the use of chloroform my hands would certainly have been tied in a few of the cases at least. It has seemed to me that the essayist should have made some exceptions to that rule. I had the last case a couple of months ago. I was called five miles in the country to see a woman who was laboring in convulsions: They didn't know whether her time was up or not, but from the bloated eyes and swollen limbs and hands I knew the time was there. Upon examination I found the os rigid; couldn't do a thing with it. Then I sent to town for another doctor to come with chloroform. He gave her chloroform and when she was under its influence in fifteen minutes I had a living baby, and the woman recovered nicely, and I believe I would have had a dead woman and a dead baby in a few hours without the use of chloroform.

Dr. C. H. McCully, of Logansport: One thing occurs to me. We all know that in the convulsions of infancy we have a great variety of causes. We have intoxication from uremia and from the absorption of toxins from the intestines, and from a high febrile condition, and it occurs to me that since the nervous organism of a pregnant female is more susceptible than under ordinary conditions, when at last we have been able to lay our hands on some specific thing and say it is the cause, we have solved but part of the problem and will have to hunt for other things.

As to chloroform, I do not regard it as a curative agent, but it seems it is an agent we can not afford to throw away. During the convulsive stage destructive tissue changes progress with greater rapidity than in the quiescent stage, and by this means we are able to stay the breaking down of tissue and the formation of new toxins until such time as we are able to secure results from other

agents. We can not afford to throw away such an agent as chloroform when we know it will produce such results for us.

Dr. C. S. Bond, of Richmond: In regard to eclampsia, the physician who has done a great deal of work in this line hesitates to put his hand on any one cause, and the idea brought out here that the coloring matter of the urine has to do with it, I do not know that it corresponds with the clinical evidence. The practitioner who has made a careful examination of the urine from day to day with the expectation that he might find some definite relation between the condition of the urine and eclampsia will be disappointed. I have watched them for months at a time, making careful examinations of the urine, and finding a very low percentage of urea I have expected puerperal convulsions; but they would clear up after a time and have normal labors. Some cases, however, that have been perfectly healthy almost up to their time and not expected to have eclampsia have gone into this condition without warning. The blood pressure would quickly increase until convulsions would come on. If the cause were the coloring matter in the urine it would not be going over with the urine, but it is a fact that may be observed that the coloring matter in the urine of a pregnant woman is more abundant than in one not pregnant. So that as far as my clinical observations are concerned I could not say the amount of coloring matter was less than in those not having convulsions. I think we have very little knowledge in regard to the cause of this disease. The etiology is very obscure.

Now, in regard to treatment, it is hardly necessary to resort to bloodletting when we have efficient means without it. In nitroglycerine we have a remedy that bleeds into the splanchnic area. It has been shown that this area is able to retain enough blood under these circumstances to much more than equal the amount of blood let from the arm. Beside, we save the blood, and it is a desirable substance in the body. What we should do is to relieve the woman of a certain amount of blood pressure. Ordinarily that pressure is kept up as long as the fetus is there. The delivery of the fetus, in my experience, has the same result as the bloodletting, except in one case, and there has been complete cessation of the

convulsions. I had one case that persisted for twelve hours after labor. I believe in giving chloroform until delivery is performed.

Another thing I think the doctors do not do enough of, and that is the efficient getting rid of the urea by the bowel. The doctor gives a tablespoonful of Epsom salts. That is not enough if there is any efficacy in Epsom salts at all. It draws serum from the blood and tissues into the bowel by its weight. So give a tablespoonful every hour until the bowel will move fifteen to twenty-five times. You are not going to kill the patient. And so where we use it in Bright's disease. We do not use near enough Epsom salts. We must give large quantities. Move the bowels eighteen to twenty-five times a day for five or six days and you will get the water out and the color will come back.

Dr. G. W. H. Kemper, of Muncie: In a practice of forty years I have met a good many cases of convulsions. And for the past twenty years there is one remedy I rely upon as a sheet anchor. I have used chloroform, I bleed when I meet with a plethoric patient, but above all I regard the hypodermic of morphine as the great remedy. As soon as a woman says, "I have got a pain in my head." "O, my head, how its hurts!" I immediately give that woman a hypodermic injection of morphine, usually half a grain. It is not original with me. It is original, I believe, with Dr. Clark, of Oswego, New York. I remember a few years ago a patient three hours after confinment was seized with convulsions in the afternoon. The next morning at nine o'clock I saw the woman in consultation. He had used bloodletting, bromide of potassium and chloroform. I suggested the use of morphine, but he was afraid of it. He said to me finally, "Will you use it?" I said, "Indeed I will." I gave the woman a half grain. Four women were holding her down on the bed at the time. In a few minutes she was quiet, went to sleep and slept nine hours and awoke without any more convulsions. Try it.

Dr. T. F. Wood, of Angola: I am highly pleased to hear this paper, and feel my ignorance as to the cause of convulsions more than ever. I am again pleased and yet disappointed to hear the

treatment recommended to the exclusion of everything else—bloodletting. That is a good remedy in selected cases. I have used it in one or two cases only. Now I wish to speak briefly of this condition. It seems we know but very little of the cause of convulsions, but we do know the condition our patient is in. Now would it not be wise upon our part to prevent this condition previous to confinement? Keep the bowels open, keep the skin and the kidneys active; particularly keep the bowels open; prevent as much edema of the limbs—as much pressure as possible—and in that way you will have your patient in better shape to go through without convulsions. Now, you have the convulsions. There are no remedies, in my experience, that equal chloroform and morphine as recommended by my friend Dr. Kemper. I certainly have had good results with them, and I never did any harm that I know of. You quiet the system, you prevent the fearful struggling. Certainly the hypodermic use of morphine is a remarkable remedy. Now in addition to this I would most thoroughly open the alimentary canal. It is one of the important things, whether the convulsions occur either before or after delivery. Emptying the cavity of the uterus as soon as possible is a wise and proper procedure. You can do this quicker with the use of chloroform than without it.

Dr. Hugh Cowing, of Muncie: In six hundred cases of obstetrics I have had a few cases of eclampsia, and have followed the practice Dr. Kemper, my friend and former associate, taught me in the earlier years to follow—the hypodermic use of morphine, not depending upon a quarter of a grain, but at the approach of eclamptic symptoms administering half a grain and repeating it in half or three-quarters of an hour if necessary to control the symptoms. Continue at the same time your chloroform and occasionally bloodletting as an accompaniment. In these cases, the half dozen that I have had, but one had an unfavorable issue, and that case was where the eclampsia had preceded any special effort to deliver several hours. Contrary to some suggestion here, my experience as to the time of the appearance of the eclampsia has been that in about half the cases the eclampsia began after labor,

and I believe the experience generally is that when they begin after labor the issue is more apt to be unfavorable.

Dr. W. A. Ferguson, of Brighton: I believe there are two periods in the handling of these cases, one of immediate necessity and the other of a therapeutical nature. For the immediate period I believe nothing takes the place of chloroform and morphine. Now for the remote period, each case is a law unto itself. Now when we speak of twenty or twenty-five passages from the bowels from Epsom salts, it depends on the case. If the case is strong and can stand it, all right. If the case is weak and anemic, it would not be proper treatment. But I find these measures are the ones to be used, and the only exceptions I take would be to the amount of Epsom salts used, as stated.

Dr. W. D. Schwartz, of Portland: I have not been practicing so very long and have not seen so many of these cases, but this has been an especially interesting topic to me this morning. I just had a case a few days ago. I was called in consultation with another physician and he was administering chloroform when I got there. The case was having a convulsion in spite of the chloroform. He had not given enough to control the convulsion. I gave a half grain of morphine, some pilocarpine and some nitroglycerine, all at once. I sweat the patient and dilated the blood-vessels and gave the morphine to quiet her. I had the women present dissolve Epsom salts and inject the solution into the bowels. The patient didn't have any more convulsions.

Dr. Geo. Rowland, of Covington: I have been interested in the discussion, but it must be remembered that we do not know the cause of the convulsions. We must remember that after the third convulsion the life of the fetus will not persist. I did not have time this morning to discuss preventive measures. It is very nice to talk about preventive measures, but when physicians of my age have been called suddenly to a case where the patient has dropped on the floor in convulsions I have got no time for preventive measures. I will agree with the gentlemen that chloroform will stop the convulsions, but does chloroform remove this cause? Keep

that in your minds. There is a cause existing, although not perceptible to our senses, and this must certainly be in the circulation of the blood. Open a vein and remove the blood and you remove the cause of the convulsion, as I have seen it, over and over again. We have been told in this discussion that we must save the blood. Do you want to save that poisoned blood in the system? It would be better to remove it. You had better reduce the quantity of blood and thereby reduce the quantity of poison. As I said in the paper, you can supply normal salt solution to make up for the quantity of fluid lost.

It has been said here, frequently, morphine is the remedy. Why do you give morphine? It does not remove the cause of the trouble. You profoundly narcotize your patient. The patient is already in a coma from the convulsive poison. Now you give morphine to add to that coma. You do not remove the cause. Open the cephalic vein, and do it heroically. Do not be afraid. You can remove large quantities of blood with safety and you are going to save the patient.

THE LABORATORY IN THE COMBAT AGAINST TUBERCULOSIS.

BY L. PARK DRAYER, A. M., M. D., OF FT. WAYNE.

In combating any contagious disease the essential element of success is always the apprehension of the disease. This is a patent fact better known to medical men than to any other class of individuals. If the cause of cancer was known, measures directed toward limiting the disease would be forthcoming. As has been recently demonstrated, yellow fever, which was fought from all sides except the right side, is now most successfully managed because its method of transmission is well known and understood. Tuberculosis until the year 1865 was looked upon as a dangerous, wasting disease, due to constitutional weakness transmitted by heredity. In 1865 Villemin showed by laboratory methods that tuberculosis material could be made to infect other animals by inoculation. This experiment was confirmed by Cohnheim in 1877, but not until Koch, in 1882, before the Pathological Society of Berlin, gave the results of his experiments was the combat with the disease placed upon anything like a fair basis. It may be said to the lasting credit of this peerless laboratory worker that the tubercle bacillus, its characteristics, the methods of finding it, and its life habits, are today as they were given to us twenty-four years ago. No particular improvement in technique, no particular newness can be found than that given to us by Koch in 1882. Knowing the cause of the disease, its manner of transmission was readily understood, and then we were placed upon the winning side. The laboratory efforts were directed toward the analysis of the sputum of patients supposed to be afflicted with the disease. The analysis of food materials, the analysis of milk supplies, the analysis of secretions from lower animals, all netted information of apparent value in apprehending the disease and suggesting

methods for the restriction of the same. Along with the finding of the germ came the numerous suggestions for its destruction. Here again preventive medicine called upon the laboratory man to determine, if possible, the remedy best adapted to the destruction of the bacillus. Tuberculin, old and new, emanated from the same laboratory, and it is of value to know that the most exact, the most unfailing, and the most reliable test for the finding of the disease, both in man and animals, is the tuberculin test.

I take it that this is not the time nor place to eulogize the laboratory worker, for he does not need it, but to suggest, if possible, lines along which the laboratory man must work to give additional help in blotting out this disease. The custom of free examinations of sputum followed by the distribution of advice for consumptives and those living with them is a measure of undoubted value, and should be followed by every practicing physician. The custom of examining the milk supplies and the cattle furnishing the milk supply, in spite of a slight difference of opinion, is still of the greatest value. I have but little doubt that tuberculosis of the udder in milk cows and general glandular tuberculosis in cattle is of dangerous food supplies the most dangerous. I would, therefore, emphasize the value of tuberculin tests of dairy herds.

The suggestions of the laboratory and the vigorous application of these suggestions by sanitary men has resulted in restricting the development of the disease in adults to a marked degree in the past twenty years. The children, however, aside from milk-fed babies, seem to have been passed without sufficient recognition. A laboratory worker has recently developed the fact, by agglutination tests, that school children are to a considerable degree infected. The tests were made upon all grades, the fewer number of the agglutinations occurred in apparently healthy children. The next largest number occurred in children with enlarged tonsils, adenoids, and children with mesenteric glandular enlargements, and the largest number occurred in the so-called scrofulous children. Tuberculosis among children abroad exists to a considerably larger degree than it does in the United States, but the percentage is somewhat on the increase in this country, and this lab-

oratory finding calls for a special investigation relative to the matter of ventilation, food supply and the inoculation of schoolrooms by adults, occurring either from a tuberculous teacher or by infection of the schoolrooms following their use for public gatherings; and I want to take this occasion to register a decided objection to the use of schoolrooms, and also rooms ordinarily occupied by the child, for the public gatherings of adults. The laboratory likewise has shown that the new and scientific ventilating system does everything but ventilate, and there is little question that the old system of raising the windows of schoolrooms is decidedly more refreshing and probably furnishes a better and surer interchange of air than does the modern system of ventilating which does not ventilate.

Many laboratory men enthusiastic in their work are devoting their time toward finding a cure. There has been no cessation in the work of prevention; indeed, this work is being more and more vigorously prosecuted, but a word relative to the work done for the relief of the afflicted from a laboratory standpoint is in keeping, and I want to mention the experiments of Liverator, who is now treating animals with an aqueous extract of the living tubercle bacilli. He rendered animals susceptible and found the serum acquired antibacillary power with slight antitoxic power. One and five-tenths mg. of living virulent tubercle bacilli, all from the same cultures, sealed in collodion sacs, were placed between the loops of the small intestines and the animals divided in three groups. The first group received no serum treatment, the second were treated with serum from tubercular animals, the third were treated with this antibacillary serum. The second group received no protection and the third group received entire protection, the disease being prevented from developing in every instance, which gives to us a ray of hope that preventive inoculation, just as vaccination prevents, may be in the dawn.

In a masterly article on Phagocytosis and Opsonins, Hektoen closes with the following: "According to Wright, many local infections persist, for the reason that the causative bacteria or their elements are not permitted to pass into the circulation in such

numbers as to stimulate the machinery of immunization to form adequate quantities of antibodies at the proper time, and because the bacteria, in a measure, are protected from the action of such antibodies as may be present normally in the body or form in the course of the infection. Numerous tests by Bulloch and others show that in the tuberculous the tuberculo-opsonic index is subnormal. In lupus the average is 0.75."

By measuring the resistance to the infective germ by comparison of the opsonic power of the patient's serum with that of the serum of normal persons, Wright and his followers have shown that in all infections there are times when the resistance of the patient is rising and times when it is falling. In the latter instance the repeated introduction of the corresponding bacterial vaccines serves to depress still further the opsonic index, that is to lower the patient's general resistance. The vaccines should be administered when the opsonic index is high—this is the fundamental principle of Wright's method—and by "properly adjusted and interspaced" doses; in other words, by controlling the effects by means of the opsonic index aim to maintain the antibacterial power of the blood at a high level. By numerous tests Wright has shown that in tuberculosis much smaller doses of new tuberculin than commonly employed give maximal immunizing responses without any constitutional disturbances. For this he employs new tuberculin in doses corresponding to from 1/1000 to 1/600 mg. tubercle powder.

As pointed out already, Wright, in addition to the use of "properly adjusted and interspaced" doses of vaccine in the treatment of local infections, especially tuberculous, also employs means to increase the flow of blood anl lymph through the infected area in order to favor as much as possible the action of the antibodies on the bacteria.

This, briefly, is Wright's method of treatment of infections by inoculations of the corresponding vaccines. Remarkable results have been achieved in intractable cases of bone, lymph node and subcutaneous tuberculosis. The application of the general method to pulmonary tuberculosis, in which Lawson and Stewart and

others have shown that tuberculin when properly given also increases the tuberculo-opsonic index, promises well and it is hoped that Wright's treatment may be given a thorough trial.

This beautiful series of experiments, the outcome of most painstaking laboratory methods, must receive the most gracious applause of us all.

I desire to present two charts which illustrate conclusively the necessity of laboratory work in connection with the work of restricting this disease. The larger chart shows that early in the nineteenth century phthisis caused about one-fifth of all the deaths. In fact, in the New York report for 1810 we find the following: "According to the bills consumption is by far the most fatal disease with which our city is affected, no less than 2,621 having died of it during the past five years, nearly one-fourth part of the whole." By following the curves you will see that about the middle of the 30's the general death rates and the death rates from tuberculosis diverge, owing to a slight decrease in the tuberculous and a considerable increase in the general death rate. In general the tubercular curve then maintains its height between 4 and 5 per 1,000 until about 1882. The general curve meantime has, at least since the middle 50's, gradually tended downwards, and this may perhaps be explained by the gradual appreciation of sanitary measures (water and sewers), and the organization of health boards (N. Y., 1866).

The discovery of the tubercle bacillus marks the beginning of the downward curve of the tuberculous mortality. Compared to the population there are only about half the number of cases per 1,000 now that there were a century ago, and even comparing it with the general death rate (which has considerably decreased), we find an enormous improvement. There is no doubt that the figures for the early part of the nineteenth century are too low, as many deaths were not entered. This makes the showing all the better for the present day. It is interesting to compare what has been done in tuberculosis with that in diphtheria. The diseases, from a sanitary standpoint have much in common, but in diphtheria, in addition to the sanitary improvements, we have the aid

of a specific remedy to combat the disease. The result is well shown in the smaller chart, where you will notice a big drop in diphtheria mortality commencing in 1894 and continuing until the present time.

In pneumonia and bronchitis our sanitary measures have availed little thus far, and the main reason for this is undoubtedly the extensive distribution of virulent pneumococci in the throats of healthy individuals. The part played by the laboratory in these diseases is pretty well reflected by the mortality curves from 1881 on.

In conclusion the State has placed at the door of the physician a laboratory for common use. It is your duty, it is my duty, to determine early the cases dangerous to the community, and failure to do so is failure to perform a sacred duty.

THE MODERN SANATORIUM TREATMENT OF TUBERCULOSIS.

HUGH A. COWING, M. D., MUNCIE, IND.

In the United States and Canada there are about 10,000 beds for the treatment of tuberculosis in 150 sanatoriums, hospitals and camps.

One hundred thousand deaths are caused by consumption, each year, in the United States. The work of housing, feeding, treating and curing where possible, this vast army is a formidable tack. A few observers declare that this problem must be solved in the home. A majority of students of the tuberculosis problem urge the necessity of the sanatorium, and claim that it is the great entering wedge, laying open the possibilities of treatment; it is an indispensable school for the education of the profession and the laity.

It should be remembered that many of the sanatoriums for the treatment of tuberculosis have been instituted in the last six years. The pioneer sanatorium work back in the 80's had only a few supporters. The people and our profession were incredulous concerning this new plan of treatment. Many are yet to be convinced of its expediency and efficiency. Unfortunately, in some instances sordid commercialism has brought the sanatorium treatment into disrepute, and scientific effort has thus been impeded.

In the short time allotted I can touch but briefly upon the salient points of this very important subject. I desire to acknowledge courtesies received and information secured while visiting sanatoriums, and through correspondence, and from the reports of societies.

A sanatorium is an institution for the treatment of cases that are not hopeless. This definition suggests the importance of an early diagnosis. In the combat against tuberculosis the greatest

responsibility is with the physician. Incipient tuberculosis too often passes unrecognized. Today, when opportunity knocks, is the time to begin a cure. Tomorrow it may be too late. Osler has said that here nothing can be done without the intelligent co-operation of the general practitioners and of the community. That there is an awakening along these lines on the part of the medical profession there can be no doubt. The results of treatment in the many sanatoriums throughout the country are wielding a wide influence with the profession. In the evolution of methods experience explodes theories that stand in the way of progress. Climate was once thought to be essential, now it is regarded as secondary. Twenty years ago the happy results of treatment at Saranac were attributed to a peculiar quality of climate in the Adirondacks. We now know that it is not climate, but the scientific and persistent application of a right method that has brought success and fame to Henry L. Trudeau.

At the first annual meeting of the National Association for the Study and Prevention of Tuberculosis, held a year ago, The Progress of the Sanatorium Movement in America was reviewed by W. H. Baldwin, of Washington, D. C. In this address he said: "The first real advance in the sanatorium movement in this country, in fact, the first successful attack in the conflict with tuberculosis by modern methods, was made by Dr. Trudeau, in Saranac, just twenty years ago. Thanks to Koch, the enemy had at last been revealed and located. There was no longer any doubt as to its identity or its manner of working, nor as to the difference between tuberculosis and other troubles which only resembled it; but how to destroy the cause of the disease and restore the patient to health was the question. Some drug which would destroy the bacillus without harm to the patient was sought for, and its discovery expected; but some of us can remember our surprise at hearing that Dr. Trudeau proposed to drive it out by life in the cold air of northern New York. Only the results with which his faith and that of his first patients were rewarded induced others to follow him and proved, slowly at first and then with accumulating rapidity, that his way was the right way, that

at last a position in the conflict which need not be abandoned had been found."

In the United States the first State sanatorium was established at Rutland, near Boston, in 1898. This institution is for incipient cases, and treats yearly about 260 patients. For several years in seventy-three per cent. of cases discharged the disease has been arrested or apparently cured. The cost to the State is $9.36 per week per patient. Of this the patient is required to pay $4 per week.

In 1904 New York instituted a State sanatorium for incipient cases at Ray Brook, in the Adirondacks. The results attained add new proof to the efficacy of sanatorium treatment. Patients are admitted in the order of application. The indigent are given preference, and are recommended by the local authorities, who assume the charges up to five dollars per week. The cost is about nine dollars per week. Already in about a dozen States and in one province State sanatoriums have been erected or their establishment assured.

The most important requisite in the sanatorium is the medical superintendence. A deep interest in the work, scientific attainments, and business foresight are vital factors.

The devotion to our profession is nowhere more strikingly evinced than in the faithful efforts of the workers who now are at the front of a winning fight against tuberculosis.

Another important requirement in the sanatorium treatment is that the case should be a truly incipient one. Unless there is reasonable hope of arresting the disease the case belongs elsewhere. About seventy-five per cent. of applicants are refused at the sanatoriums for the treatment of incipient tuberculosis because their cases are considered too far advanced.

The modern sanatorium represents the most favorable environment attainable for the consumptive,* and depends for its efficiency on the following factors: a good climate, buildings specially adapted for this method of treatment and for protecting its in-

*H. L. Trudeau. A Directory of Institutions and Societies Dealing with Tuberculosis in the United States and Canada. Compiled by Lilian Brandt.

mates from infection, facilities for living an outdoor life in all kinds of weather, good food, and strict medical discipline so far as rest, exercise, and the details of the daily life are concerned.

The drift of present treatment is to care for patients in their home climate. A strong protest has come from observers in California, Colorado, New Mexico and other localities against the practice of sending indigent consumptives far from home and friends. Climate should not be sought at the expense of comfort. While in the Adirondacks I saw many consumptives living in tents and shacks without ordinary comforts. Some came from distant States hoping that the climate would restore them to health. Here I observed that in summer the insect pests and frequent torrential rains did much to counterbalance the advantages of mountain climate. We now know that right living in the Mississippi Valley will cure incipient tuberculosis. The right methods of living for the consumptive are best learned in a well conducted sanatorium.

The tent, the cottage, or the pavilion plan is employed by most sanatoriums. The essential conditions contemplate sunlight, ventilation, and convenience for an outdoor life. Special care of the expectoration, scrupulous cleanliness, sunlight, abundant air space and ventilation, are relied upon by Trudeau, and have proved thoroughly efficacious in his experience to protect patients from any evil effects of aggregation. He contends that there is much less chance for a susceptible individual to become infected in a well-planned and well-directed sanatorium than anywhere in the ordinary walks of life. The patient must learn to live out of doors, and under comfortable conditions must become accustomed to natural changes of temperature and inclemencies of weather. Medical discipline is the keynote of success. Treatment should continue five months or more.

Again I would remind you that the training the patient receives at the sanatorium is of great educational value to himself and to others. When he returns to his home community he becomes a missionary, teaching and preaching and practicing the gospel of right living.

THE STATISTICAL AND SOCIAL STATUS OF CONSUMPTION IN INDIANA.

BY J. N. HURTY, M. D., OF INDIANAPOLIS.

The monthly reports of the physicians of the State to the State Board of Health show that consumption is indeed endemic. It prevails in every county, in every community. It knows no season, no region. In summer's heat and in winter's cold, it proceeds on its awful way. All months are alike to consumption. It spares not infancy nor old age; childhood nor adolescence; nor early nor middle manhood and womanhood; nor sex, race or occupation. It awaits its victim in the house. It lurks in bed chambers. It hates the open air and the sunshine. Want is its friend. The absurd superstition that night air is unhealthful is one of the strongest allies of consumption. It is helped onward by the neglect of school authorities to thoroughly ventilate schoolhouses. The false economy which heats schoolrooms with stoves, which leaves out ventilating ducts, which seats children of all sizes at the same sized desks, is another ally. The closed bedroom window, which is observed so frequently when one is abroad in early morning tells of sleeping human beings who are denying themselves air, which is the first essential of life. Consumption is a cause of poverty, and poverty is a cause of consumption. Sunshine and air, the enemies of consumption, are shut out of the houses of the poor. The need of proper food helps forward the malady. The poor cry in agony under the burden. Consumption is a social, as well as a medical, problem. The law should forbid the construction of houses which are conducive to consumption. The building of an unsanitary house is a menace to life, liberty and the pursuit of happiness. It is the affair of the public that all houses should be sanitary, and kept so.

The homes of some doctors, and the offices of some doctors, are

very unsanitary. Consumption all too frequently enters the dwellings of members of the medical profession. Nor is it to their credit. An Indiana doctor permitted his daughter to teach school in an illy ventilated schoolroom and to use the same desk and books which her consumptive predecessor had used. The result to be expected was realized. On account of his stupidity or ignorance or neglect, he has had the burden of an invalid daughter for four years with the apprehensions and mental sufferings which attend, and he must bear the expenses of the funeral of one who should have been preserved in abounding health.

Another doctor, not a long journey from this spot, permitted the conditions conducive to typhoid fever to exist on his premises. He invited the disease and it accepted his invitation. His beautiful daughter, just entering womanhood, was stricken down. His skillful treatment, in which he had full pride, saved her life, but before fully recovered, when weak and open to the invasion of other infections, he permitted her to resume her work as stenographer in the fetid air of the court room. Now she has tuberculosis, and the day is near when she will lie in a coffin beneath a pulpit and the preacher will utter that old blasphemy—that God, in his infinite wisdom, has called a loved one away.

A groceryman in Indianapolis buried his wife, dead of tuberculosis. He employed several physicians, and not one of them warned the man and the three daughters that consumption was transmissible, nor did they give the least advice in regard to prevention. The bedroom where the mother died was not disinfected, for the city authorities, which give away franchises worth millions to business corporations, say the public treasury will not stand the expense. The girls occupied the infected bedroom, and now, after only eleven months, there are three young lives to go out on the altar of ignorance and neglect. What is this we hear of sins of omission being of equal weight as sins of commission? Who will be to blame for the death of these three girls, which death is certain soon to occur?

The physicians at tuberculosis institutions say that family physicians do not recognize tuberculosis until it has progressed so far

as to become plain to the close observing laity. If this is true, and it is not denied, should not such family physicians take a post-graduate course in physical diagnosis?

It has been said that the problem of tuberculosis would soon disappear of itself if it were possible for everybody to breathe fairly pure air, to be clean with a reasonable effort, and to have enough of the right sort of food to eat. To make the provision in regard to cleanliness plainer, it would do to add—and if all oral excrement were disposed of in a sanitary way. The inalienable right to spit is claimed and exercised by men only, and it is therefore the male of the human race who is the greatest factor in the dissemination of the seeds of tuberculosis. We know, too, of other diseases which are transmitted to poor woman by man. If you contend it is not the duty of the medical profession to warn the people and to teach them in the matter of preventing tuberculosis, just leave it out of the catalogue and behold its sorrowful incompleteness. Suppose that this day every physician in Indiana, quickened into action by a sense of his duty, should faithfully report all cases which come under his care and commence to teach at favorable moments the gospel of fresh air, cleanliness and sunshine; would not the roll of tuberculosis deaths be shorter next year?

Against social troubles, two forces must contend. Individual effort must be active and co-ordinate with the power of the State. Let the law forbid, under penalty, the distribution of the seeds of tuberculosis, and let the people demand and aid in the enforcement of the law. No spit, no consumption. Therefore, let the spitter have his reward. Let the law—as in New York—declare against unsanitary dwellings. The avarice of man should not be permitted to express itself in building or even owning dwellings so constructed as to keep out air and sunshine. The right to destroy the health and lives of human beings does not inhere in the right of property. He who builds a house flat upon the ground, or so constructs it that it may become damp and moulds appear, commits an error which may make him an invalid and a charge upon the community, or undermine the health of others. In both instances, the public is deeply interested. Let the law therefore

say that all dwellings shall conform to certain sanitary conditions, and then set them forth clearly and succinctly. What an educational force this would be! The man contemplating the construction of a dwelling would have the law brought to his attention by builders, who should not have a legal claim if they constructed an unsanitary house. He would think over the situation and in time understand it. With understanding would come ready compliance. The tiny bedroom, close against the roof, with its one little window which is usually immobile, and which is so frequently seen in farmhouses, is a crime. Let the law so declare and provide a penalty. "Oh, this won't do," you say. "People must be housed. They must be protected against the weather." So they must, but only rightly protected. When they sicken with tuberculosis, modern therapy puts them entirely out of doors. It is the failure to house properly that is largely responsible for calling into existence the sanatoria. The tent colonies, the sleeping shacks, the window tents, would not be needed to supply air to those suffering from the consequences of air starvation if the air had been supplied from infancy.

ECONOMICS OF TUBERCULOSIS.

Considering alone the mere economic effects of tuberculosis and ignoring the social and moral problems connected therewith, we find we have to deal with very complex conditions.

For simple general classification we may consider the economic course from four standpoints.

1. Economic effects on the State.
2. Economic effects on the city, town or country community.
3. Economic effects on the family.
4. Economic effects on the individual.

So long as the working powers of the person invaded by tuberculosis are not impaired, there is no economic problem.

The duration of time during which an individual may have tuberculosis with unimpaired working powers depends upon his constitution, the virulence of the disease, the nature of his occupation and the pressure of necessity. The earning capacity of a person whose occupation requires long and severe muscular labor in

the presence of dust and perhaps bad air, will be sooner impaired by the onset of tuberculosis than in the case of a lawyer or minister engaged wholly in mental work.

The economic cause of a case of tuberculosis falls into three periods:

1. *Working period,* or period of unimpaired earning capacity after implantation, up to the time of diminished earning capacity.
2. *The period of partial disability,* or period of irregular work at reduced wages.
3. *The period of complete disability,* with or without dependency.

From the State's point of view, the value of a citizen as measured by his usefulness, ceases when his ability to work ceases. The State not only loses in this way, but an item of expense may arise in the ultimate dependency of a large proportion of wage-earners. It is in this latter class that the heaviest loss to the State will occur; as these persons not only cease to produce, but the State must provide for their care and support. At the least calculation there are in Indiana at any time 20,000 (Vaughan says 30,000) consumptives, 5,000 doomed to die within twelve months, another 5,000 in twenty-four months, and another 5,000 in thirty-six months; and all 15,000 have ceased to be economic factors in life, and are a source of danger or an actual menace to those about them. One hesitates to express this condition in money terms. A review of the accompanying havoc table causes still more hesitation.

HAVOC WROUGHT BY CONSUMPTION IN INDIANA IN 1904.

Total deaths	4,492
Males	1,745
Females	2,797
Mothers in prime of life 18 to 40	987
Fathers in prime of life 18 to 40	315
Orphans under 12 years of age left motherless	1,843
Orphans under 12 years of age left fatherless	643
Total orphans produced in one year	2,486
Homes invaded in one year	3,553

Price, from whom much of this analysis is taken, found that among 177 wage-earning males 72, or 40 per cent. became dependent on charitable aid during the course of their disease; 26, or 14 per cent., died in charitable institutions, and there was good reason to suppose that the majority of the others received at some time charitable aid. If, upon these findings, we assume that 40 per cent. of all wage-earning consumptives become dependent, then of the 1,506 in that class who died in 1904 in Indiana, 602 were more or less dependent, either upon relatives, charity societies or the public.

The loss of the wages of the wage-earner of the family is really not the severest loss, for the history of tuberculosis in families shows that the result of the long continued illness brings not only a complete exhaustion to the family treasury, but an ultimate destruction of a considerable portion of the family from disease. There seems to be no other disease of such malignant influence in its tendency to bring the family unit down to the lower levels of social and material welfare. No method is known for computing in figures the effect on the family produced by the deaths of children and especially of mothers, but the effect on the family and indirectly upon the State will ultimately be as great or greater than the death of the father or wage-earning parent. In considering the losses by tuberculosis, the actual loss, occurring during the course of the disease in the individual and extending up to the time of his death, is perhaps the least loss. The greater is the potential loss beginning at the death of the individual and extending for an indefinite period.

These conditions serve to impress upon the mind the awful loss figure, which would loom before us if it were possible to make up such figure. Our calculation then can only be partial, but even then we arrive at a startling sum. If we assume that the net value of a human life after the age of 15 is $5,000, the State law places it at $10,000, then Indiana experienced a loss in 1904 of $10,000,000 from consumption, and no account taken of the social, moral and sentimental value. Biggs estimates that New York City sustains an annual economic loss of $23,000,000; and that the nation at large must sustain an annual loss of $330,000,-

000 because of tuberculosis. If Biggs' figures are accepted, then Indiana's proportion is $11,660,000. We submit that any such loss as this should soon attract the attention of the people and through them of the State government, else we will be branded as stupid indeed.

STATISTICS.

Three tables relating to the statistics of consumption are here given. The first shows the deaths in 1905 from different forms, by months and totals; the second shows deaths by race, foreign and American born and by social conditions; the third shows deaths from different forms by age periods.

The deaths from tuberculosis of the larynx number 58 and of the lungs 3,940, a total of the respiratory tract of 3,998. The totals of the other forms are meningitis 151, abdominal 207, Pott's disease 19, cold abscess 4, white swelling 7, other forms 49, and general 494, making the total already given of 4,492. From the age table we discover that the critical period is between 15 and 40. The number of deaths in this period was 2,601, or 57.7 per cent. of the total. The highest 5-year period was 20 to 25, when 697 deaths or 15.5 per cent. of the total occurred. Tuberculosis of the meninges occurs in all but six of the age periods, 67, or 44.3 per cent. of the 151 in the first and second years of age. Abdominal also appears unusually in the first two years, but mostly prevailing from 15 to 50. Cold abscess does not appear until the ten-year period, one case appearing at 70 and one at 85. General tuberculosis is severe in the first two years, 103 deaths being reported, and these like the pulmonary form become very destructive from 15 to 50.

THE FAMILY PHYSICIAN.

The tuberculosis problem depends for solution to a very great degree upon the family physician. No matter how active boards of health may be, no matter how many tuberculosis societies are formed, no matter how many sanatoria are built, we must look to the family physician for most of the work in fighting consump-

tion. It was Osler who said: "In the warfare against tuberculosis the man behind the gun is the general practitioner; the battle can not be won unless he takes an active, aggressive and accurate part." The family physician must discover the early and curable cases. He is the one to call attention to the import of the stooping shoulders, the poorly developed or deformed chest, the pale appearance, the slight hacking cough, a marked irritability, a loss in weight, a lack of appetite, the glistening eye, pasty skin, the bright color of the cheeks, a frequent rise of temperature in the afternoon, and a dislike to pleasures or to duties which were formerly easy to perform. True, indeed, it is, that the heat and burden of the combat must be borne by the members of that profession who are controlled by the Hippocratic Oath.

"TABLE A."

INDIANA TUBERCULOSIS DEATHS BY MONTHS, 1905.

DIFFERENT FORMS.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Larynx	10	3	6	6	6	6	2	5	3	1	4	6	58
Lungs	385	376	415	374	340	324	308	303	260	265	283	307	3,940
Total	395	379	421	380	346	330	310	308	263	266	287	313	3,998
Meninges	12	11	15	15	14	13	17	9	8	12	12	13	151
Abdominal	4	14	16	22	9	8	20	20	18	32	19	15	207
Pott's Disease	1	3	2	.....	.....	1	3	1	3	3	1	1	19
Cold Abscess	.....	.....	.....	.....	1	2	.....	.....	.....	1	.....	.....	4
White Swelling	1	.....	.....	.....	.....	.....	2	1	2	.....	.....	1	7
Other Forms	4	.....	2	2	6	2	7	6	7	5	4	4	49
General	2	.....	5	7	5	5	2	10	5	7	3	6	57
Totals	24	28	40	46	45	31	51	47	43	60	39	40	494
Grand totals	443	435	503	472	426	392	412	412	349	366	365	393	4,492

CONSUMPTION DEATHS BY AGES, 1905.

	0	1	2	3	4	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	75-80	80-90	90 and over
Of Larynx	3	.....	.....	.....	.....	1	1	7	8	4	6	7	3	2	5	5	3	2	....	.....	.....	.....
Of Lungs	50	37	13	10	3	36	74	404	642	534	431	378	251	217	195	134	148	152	111	66	28	.....
Total	53	37	13	10	3	37	75	411	650	538	437	385	254	219	200	139	151	157	111	66	28	.....
Meninges	32	35	10	6	6	16	9	8	8	6	5	.....	1	4	1	.....	.....	.....	4	.....	.....	.....
Abdominal	16	10	1	.....	1	5	6	15	21	18	12	27	11	14	13	10	11	7	2	4	1	.....
Pott's Disease	4	.....	.....	.....	.....	3	2	2	.....	3	1	.....	2	.....	.....	.....	1	.....	.....	.....	1	.....
Cold Abscess	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....
White Swelling	.....	.....	.....	.....	.....	.....	2	.....	2	.....	.....	.....	.....	.....	1	.....	.....	.....	2	.....	.....	.....
Other Forms	1	.....	1	1	1	1	1	5	5	5	4	4	1	6	4	2	1	.....	1	2	2	.....
General	2	3	1	1	.....	1	2	7	10	4	5	3	4	2	3	2	1	3	2	.....	1	.....
Totals	55	48	13	8	8	26	22	38	47	36	27	34	19	26	22	14	14	11	11	6	6	.....
Grand Totals	108	85	26	18	11	63	97	449	697	574	464	419	273	245	222	153	165	168	122	72	34	.....

TUBERCULOSIS BY MONTHS, 1905.

DIFFERENT FORMS.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Totals.
Larynx	10	3	6	6	6	6	2	5	3	1	4	6	58
Lungs	385	376	415	374	340	324	308	303	260	265	283	307	3,940
Totals	395	379	421	380	346	330	310	308	263	266	287	313	3,998
Meninges	12	11	15	15	14	13	17	9	8	12	12	13	151
Abdominal	4	14	16	22	9	8	20	20	18	32	19	15	207
Pott's Disease	1	3	2	....	....	1	3	1	3	3	1	1	19
Cold Abscess	....	....	....	....	1	2	....	....	....	1	....	....	4
White Swelling	1	....	....	....	....	....	2	1	2	....	....	1	7
Other forms	4	....	2	2	6	2	7	6	7	5	4	4	49
General	2	....	5	7	5	5	2	10	5	7	3	6	57
Totals	21	28	40	46	45	31	51	47	43	60	39	40	494

DISCUSSION.

Dr. Geo. F. McCoy, of Columbus: It will be impossible to discuss five such finished papers as we have just listened to in five minutes. Fortunately, they need very little discussion. It is the reproach of the medical profession that we have in our midst a preventable disease of which fifty per cent. might be cured and seventy-five per cent. arrested and so little effort being made in the cause of humanity. And yet the profession is not alone guilty of the crime of neglect. Our legislators and our executive officers are equally culpable in that they have not furnished us the means. In Indiana there is not a spot where a dollar of public funds is spent for the cure of consumption.

The disease, consumption, whether we consider it in regard to its prevalence, or as a cause of death, or in its social or economic aspects, is clearly of the most vital importance to the entire human race. The apprehension of the victim, deepening into terror, the probable misfortunes to wife and children, almost too terrible to

be thought of, the weakening of the vital forces, the gathering shadows, the hopes cast down and the renewed hope, the final dissolution, the pathos of this situation, is repeated so often that the very commonness of it dulls our appreciation and our sympathy. Other chapters of this story are found in the beneficiaries of the charitable associations, orphans' asylums, and in the kitchens and laundries where mothers are struggling to support their orphan children at the expense of their own life energies. Fortunate for us that our imaginations are so feeble that only a few of the nooks and corners of this enormous desolation are brought to our notice. It is against the terrible spread of this disease that the National Association for the Prevention of Tuberculosis was organized. It seems incredible that physicians, men whose hearts are overflowing with the milk of human kindness, should be indifferent to this the greatest foe of human progress. But there are brighter days coming. Almost day by day we have added to the list earnest workers, men and women everywhere, who are taking up this burden of the people. The subject of tuberculosis becomes one of vast importance. Every day they come to you and come to me asking what their place is and what they can do in the coming fight. The great medical association of the State of Indiana has been always on the right of every question that presents itself. She stands for the uplifting and upbuilding of the human race, and in this fight will be found perfectly responsive and not recreant to the trust imposed, and wherever the battle is fiercest, Indiana physicians will be found. We can expect little success unless we have the support of all physicians brought to bear upon our legislators, and we must have the hearty co-operation of the people. It is the people's fight. It is engaging the best effort and thought of the best people everywhere. It has enlisted the enthusiasm of larger numbers than all those who marched in the crusades of old in the crusade against this the "Captain of the men of death."

Dr. Edwin Walker, of Evansville: Before speaking of the point I want to call attention to I want to express my appreciation of the work of our Secretary of the State Board of Health, Dr. Hurty, in this campaign of education. It has been of great benefit

to the laity, and he has got to come to the doctors once in a while, for they are too often careless about this matter, as in an instance that came under my notice recently where a man was dying of consumption, expectorating on the floor, with all the members of his family about him, and no physician had ever said anything to him about it.

Two points briefly: The early diagnosis of consumption Dr. Potter has given us in an excellent manner, but he did not mention what so often precedes it, and probably more frequently than any of us suppose, the tuberculosis of the glands and other organs of the body, especially the mesentery and the urinary organs, which so frequently precede even pulmonary tuberculosis. Patients that come to you complaining of bilious attacks, slight attacks of fever without any apparent cause, are in a large proportion of cases tubercular. Children who have abdominal pains, disorders of digestion, are brought to you with the history that they are frequently troubled with indigestion. A large proportion of them are tuberculous. For some years I have in doubtful cases used the tuberculin test and have been astonished in some of these cases to find the trouble was tubercular, and have been rewarded with a large measure of success by giving directions as to how they should live.

The other point was, the work of Wright and Douglass in London. I do not propose to go into details, but my attention was first called to their work in St. Peter's Hospital in London when I was attending the genitourinary clinic there. All patients were treated after their method. Mr. Barton collected a large number of cases and allowed me to read the histories. Many of the patients looked as well as any one in this room and yet were suffering with tuberculosis of the bladder and were beyond help. The work was also being carried on in cases of tuberculosis of the bones, and many cases declined by the surgeons had been cured by these gentlemen. Coming home eighteen months ago I have followed out their treatment, and I must say my results, while not settling anything, yet have been strikingly satisfactory, and especially I have had several cases in children who had disease of the mesentery. Some of these children had been suffering with

fever and pain for two or three years, and so far as I am able to say they have recovered. At least they are much better and have gained in weight.

I want briefly to refer to one other case, and while I may be mistaken in the diagnosis, the first condition was so striking to me that it was significant. The patient was a girl fifteen years of age, suffering constantly with headache, fever, and one or two convulsive phenomena. I had her under observation for some time and had her eyes examined and didn't recognize anything significant in that direction. Four months afterward she had obstruction of the bowels. I found she had been vomiting continuously for several days; retracted abdomen, severe pain in the head, dilated pupils, suffusion of the eyes, a little temperature, from 99 to 100.5, and a slow pulse; the head was retracted. Taking all this and the history of the trouble the spring before it occurred to me I had undoubtedly here a case of meningitis and probably tuberculous. After taking the temperature for two days I gave the tuberculin test and in eight hours the symptoms were more severe and the temperature went up to 102. I supposed then there would be nothing but a fatal issue and so informed the father. I showed him the literature. After three days I repeated the test with the same result. I gave her treatment according to the plan of Wright and Douglass, and she is well and living today. After that time I saw in the Journal of the American Medical Association a report of two cases of meningitis in which lumbar puncture was made and the bacilli found, and yet the patients got well. So that we have some hope even in meningitis.

Dr. B. VanSweringen, of Ft. Wayne, presented the following resolution, which was adopted:

Resolved, That the Indiana State Medical Association does hereby reaffirm its former published opinions, viz., that tuberculosis is an infectious and in large measure a preventable disease; that it is amenable to successful treatment under proper conditions; and that the State of Indiana should without unnecessary delay make provision for the institutional treatment of early tuberculosis. To these things we again call the attention of the people

of Indiana, and direct the Secretary of this Association to forward a copy of this resolution to His Excellency J. Frank Hanly, the Governor of Indiana.

Dr. F. B. Wynn, of Indianapolis: I want in just a very few words to present to you a plan which has had its origin in the Indianapolis Medical Association, relating to the question of educating the people, and it is, as Dr. McCoy has observed, a people's question essentially. The plan was inaugurated by our local medical society with the view of informing the people upon this question in its various phases. We have in connection with our State and national societies a scientific exhibit, and this for our edification and education. Why should we not have such a thing in connection with tuberculosis, and so this has developed and is a new outgrowth of the idea originating with this Association. Some months ago no doubt some of you saw the tuberculosis exhibit, which had a powerful and certainly a very beneficial effect upon the layman. Those who examined that exhibit must have been impressed that it was heterogeneous. So that it seemed to us in Indianapolis that there might be prepared an exhibit much smaller than that; in fact, cramped into a very small space, that would still teach a lesson better than that great exhibit. With that idea in view a committee was created in our local society, of which I have the honor of being chairman, to prepare such an exhibit. I want to show you very briefly some of the things we are doing. We have started out to obtain photographs over the city of Indianapolis, of tuberculous cases, the idea being in the first place to show the people that it is a disease not merely of the lungs, but of various tissues and organs. For instance, here is a series of photographs showing tuberculosis of the skin. And it is better to have these things with a local color; cases that now exist in Indianapolis. This group of photographs teaches the layman that it is not merely a disease of the lungs, but it affects the skin also. That is one lesson to be learned. Now take another group. Tuberculosis is a disease that attacks notably the bones and joints, and here again photography may teach the lesson, and so from individual cases that we have found in the hospitals and otherwise

we show the effects of this disease on the bones and joints. And so it shows diseases that he was familiar with but which he didn't dream was tuberculous.

Now Dr. Hurty has very graphically given in charts the effects of the ravages of this disease. I have some charts and pictures also. Here are two pictures showing the economic features upon which Dr. Hurty dwelt. Here are photographs of two mothers taken within the past two months. Both have since died, each with babies in arms, all of them the subject of charity. These infants must be cared for until they are fifteen. Somebody must pay it. The State must care for them, and it becomes an economic loss of at least ten thousand dollars. There may be appended to such pictures such explanatory data as Dr. Hurty has, or some other.

I had in mind to introduce with these, groups illustrative of tuberculosis in institutions. The same might be done with the other eleemosynary institutions and hospitals. So much for the picture groups of tuberculosis as manifested in the body.

Now take another question, that of the open air treatment, views of which I have here. That ought to be easy enough in the country and in the towns, but in New York City it is a problem to get into the open air, and yet they do it right in the heart of New York. They treat cases by the open air method. I have a friend practicing in New York who treats these cases by placing them on a board and sticking the head out through the window, leaving the body in the room. Here we have a picture showing the difficulties —the patient on a fire-escape. Here is a patient upon the roof of a building in a hammock. Here is a whole group of patients upon the roof in Philadelphia, showing the difficulties, and yet that the treatment may be carried out.

It sees to me now with such a collection as this, even with what I have shown, there can be an exhibition presented which will teach a wonderful lesson to the people. The first object to be attained is to get the doctors all in harmony with this idea of the prevention and treatment of tuberculosis.

Now what do we propose to do with this plan? The plan most

feasible is this: Have such photographic groups and have statistical charts like Dr. Hurty's and mine. Let these all be posted. My first idea was to have folding cabinets with folding leaves like we see in some of the railroad offices containing big, fine pictures along the route of the roads. When you see them you want to examine them and so these picture groups might be placed upon screens. Or, perhaps, what might be better, upon a revolving drum, and have the pictures under glass placed on exhibit in various places. What would you do with it? In the first place be cautious of what you put on them. We should have a committee of men who have good sense and would not put on things that would cause unfavorable comment. Then place them on exhibition where the people will see them, as in the public library. Persons going into such a place to read are thoughtful people. They will examine and think about it and tell about it. Or possibly in the interurban station in Indianapolis. I believe there is much of practical value that might be disseminated among the people as to the nature, the care and the cure of this terrible plague.

Dr. C. S. Bond, Richmond, proposed that if photographs of tuberculous cases were sent him he would make lantern slides of them and exhibit them at the next meeting of the Association, and after that they could be sent over the State to be exhibited.

On motion of Dr. Schwartz, of Portland, the offer was accepted.

Dr. L. F. Page, of Indianapolis: I feel that it is hardly just in a discussion of this subject that not one word has been said about laryngeal tuberculosis. My own experience in college and hospital clinics and in private practice is that more than 58 or 60 laryngeal tubercular cases have occurred in this State this year. The chart showed 58 cases. We know perfectly well, also, that there are certain conditions of the larynx that are pre-tubercular, that indicate the tubercular tendency. Everyone who makes a laryngoscopic examination knows that in these cases there is an appearance of the larynx that positively indicates a tubercular tendency, and it is hardly fair that this phase should be over-

looked. We know how difficult it is to keep the upper respiratory tract in a sanitary condition. We know in children the effect of obstruction of the upper respiratory tract shows at once in the development of the lungs and the whole organism. So that this phase of the subject should not be overlooked. These obstructive lesions lessen resistance and help the invasion of the tubercle bacilli. Post-mortem examinations in Germany have shown forty per cent. of all cases have the larynx more or less involved, so that this shows we are in the habit of overlooking these things. Every one who treats tuberculosis should make a habit of making a thorough examination of the larynx.

THE SYMPTOMS AND MANAGEMENT OF THE EARLY STAGES OF INCREASED BLOOD PRESSURE.

BY A. C. KIMBERLIN, M. D., OF INDIANAPOLIS.

In the scientific study of the diseases of the cardiovascular system there has been opened a new and important field full of both interest and possibilities, the latter of which have not yet been fully appreciated. There is such an alarming increase in the number of cases of premature vascular degeneration that it may with some truth be said that this is the sclerotic age. The points I wish most to emphasize are that arteriosclerosis as a disease is of very frequent occurrence among quite young men, and that its successful treatment depends entirely on the early recognition of the exciting factors. In the early state only of this condition is treatment of any avail, which must necessarily be almost wholly prophylactic.

I wish to direct attention principally to the variety of vascular diseases known as diffuse arteriocapillary fibrosis, sometimes called angiosclerosis. A disease with its early pathology found in the peripheral arteries, and capillaries, if uncomplicated, can have but one constant, though early sign, viz.: hypertension in the arteries. So constantly is this disease associated with, or the immediate result of mental overwork, that the gradation from the exaggerated functional to the pathological condition does not admit of sharp clinical distinction.

Of the exciting causes, I wish to emphasize occupation and habits of work. When this disease obtains in early life the so-called brain worker furnishes the largest per cent. of cases. The successful business man, undergoing the constant and keen competition of commercial life, and the professional man, as a result of intense and constant application, present a physiological state which is often inseparable from the primary stage of angiosclerosis.

Not alone the brain worker with active habits composes this class, but also the brain worker of sedentary habits is a common subject. While the latter probably presents a different symptomatology, he is not less frequent among its victims. Both classes if studied carefully, present sufficient early evidence to make possible a correct diagnosis.

The first class of patients is too often, because of the great mental and motor restlessness or extreme irritability of temper, or the constant tendency to show a most exaggerated reaction to all the slight incidents of daily life, looked upon as "cranks" and turned aside without the careful consideration which their condition demands. In the splanchnic class the headaches, which are so constant, often occur early in life in a mild form and at long intervals. This class is, too often as a rule, favorably influenced by slight medication or attention to diet, but in time there develop the obstinate symptoms and progressive tendencies characteristic of advanced sclerosis of the splanchnic vessels. In all these patients, the frequency of increased arterial tension in the early stages makes the study of the blood pressure of first importance.

A given number of persons of the same habits of work and diet may not, owing to inherited strength or tendencies, be similar or equally affected. The appearance or recurrence of symptoms, though often vague, if accompanied by hypertension in the arteries should mark them as subjects of organic disease and they should be treated as such. Many patients come to us in an advanced state of arterial sclerosis, who on closer inquiry give a history of overwork or prolonged worry, increasing nervousness or often with associated digestive disturbances, symptoms so common as not to attract particular attention from either the patient or the medical attendant. The thorough study of such a case at the proper time would probably have made possible the correction of the various habits and tendencies, and doubtless would have added many years to the health and usefulness of such persons. The conspicuous abscene of gross pathological changes or of physical signs makes the early diagnosis possible only by a careful study of the clinical history and the perverted nerve and digestive functions. A positive

diagnosis is only made by repeated and comparative study of the blood pressure. The increase of the blood pressure in the early stages only of this disease, is constant enough to be reliable in diagnosis, although in the localized primary degenerative variety hypertension in the arteries is not so constant. Blood pressure is of little positive value when complications are present, especially disease of the myocardium, or a sclerotic condition of the large and medium-sized arteries. Chronic arterial hypertension implies an elastic state of the walls of the arteries as well as a healthy myocardium; the latter if affected at all, must still be in a state of unbroken compensation. This last statement does not apply to the condition of the heart in an advanced degenerative state. In such a case reflex influence may produce a marked though temporary rise of blood pressure, in arteriocapillary fibrosis, where complications are not present. However, the increased blood pressure under such conditions is much more significant when studied together with the physical signs of the heart, some of which will be sufficiently pronounced to leave no doubt of the stage of the disease. I do not mean to infer that the heart will always be found normal in the early stages of angiosclerosis. The excited heart's action from overwork, and possibly slight hypertrophy or exaggerated aortic-valve sound, are rather constant in the early state of arteriocapillary fibrosis, and are not only of value in diagnosis but when considered in connection with the hypertension, together with the few clinical symptoms, should encourage and stimulate a most vigorous line of treatment at a time when we with confidence may expect an almost certain response. Ofttimes simply hygienic treatment alone will prove sufficient if intelligently prescribed and persisted in. I am sure it is not possible to exaggerate the influence of chronic indigestion and faulty tissue metabolism as an exciting cause of the diffused forms of arteriocapillary fibrosis, as well as in the production of the splanchnic or visceral variety. This evil influence is much intensified if the indigestion is dependent on a neurotic state or temperament, the latter condition which alone is so frequently a cause of arterial hypertension. This increased vascular tension whether due to habits of work or excess

in diet, or predisposed by heredity, may present a very variable symptomatology accompanied by many seeming complications occupying the foreground of the clinical picture, but the real danger is more remote and certain to manifest itself ultimately either in an atheromatous condition of the walls of the larger arteries or in the fibrous degeneration of the various organs, especially the heart and kidneys, conditions so constantly present in the terminal stage of angiosclerosis. However, the presence of such gross pathological conditions precludes all hope of successful treatment.

Consequently I must again emphasize the importance of detecting early the increased arterial tension, which can not be done with certainty or accuracy by the sense of touch in the palpating finger. The size of the artery, the volume of the pulse wave or the conditions of the arterial walls to the sense of touch would so frequently lead to fallacies in our observation in estimating the blood pressure as to render palpation deceptive and of no value in diagnosis. The frequency with which angiosclerosis presents in the early stage no signs of organic disease not only makes its recognition without careful and thorough study most difficult, but places it in a class of ailments, prognostically speaking, entirely distinct from the arterial changes incident to age or those induced by syphilis or alcohol.

While the alcohol may excite prematurely a diffused form of arteriosclerosis, yet, like syphilis, its effect is more frequently localized, often being confined in a great measure to the large or medium sized arteries, at times affecting alone the aortic arch or the coronaries, a condition which at no time is accompanied by the increased arterial tension as in the capillary variety. This latter form of arterial degeneration is often not accompanied by any signs or symptoms at all, but frequently marks the final stage of many subjects of angiosclerosis, although often lacking wholly the symptomatology so constant and characteristic of the latter. The point to be emphasized is that cardiovascular disease of alcoholic or syphilitic origin is closely akin in pathology to the terminal states of angiosclerosis and presents conditions not so favorably influenced by treatment.

The hereditary influence in this disease is certainly well illustrated in a patient. I once saw in a young man, aged 22, of rather phlegmatic temperament belonging to a long line of wealthy and prosperous ancestry, all of temperate habits. He presented himself, complaining of a chronic diarrhea, having four or five watery stools each morning; there was a firm and rather full pulse to the touch. Blood pressure measured 155 mm. The urine was normal. In appearance he was rather pale, but felt very well. The family history developed the very interesting fact that not one of his male ancestors, of which there were many, ever lived to the age of 50, all succumbing to various chronic and vague ailments.

In another case, a young man, age 24, of good personal habits, except a moderate smoker, complained of an increasing tired feeling for the past twelve months. He suffered from insomnia and mental lethargy. Had a good appetite, although slightly constipated. Heart beats 80. The first heart sound somewhat excited, the valves clear, the aortic sound exaggerated for his age. Repeated observation showed the blood pressure to range near or above 160. A reduction in his food, plenty of out-of-door exercise and the frequent use of cathartics soon affected a material lowering of the blood pressure, cleared his brain and made him, as he expressed it, feel like his old self again. The family history of this man developed the fact that his father had been a semi-invalid for some years and had never had a positive diagnosis of his ailment made until he went abroad, when he was told by his examining physician that he had arteriosclerosis in an advanced form, and advised him to return to America; this he did and died at the age of 45, soon after reaching home.

How many such cases as these come constantly under our care and are indifferently examined and treated and allowed to go from one physician to another until the time and opportunity for successful treatment have passed?

Conclusions: 1. That many young men of great commercial value and useful influence are thus left without relief, I am fully convinced.

2. By persistent effort and proper means a correct and early

diagnosis is possible in a great majority of such cases. An early diagnosis is of importance, as treatment must be prophylactic and instituted before the appearance of gross or secondary changes.

3. Too often the presence of such disease is only recognized in its terminal stage.

4. Of most importance as an etiological influence is the incessant and high pressure style of work so common among successful young men—a condition so well described by Dr. Osler that I will quote it in full:

"In the worry and strain of modern life arterial degeneration is not only very common, but develops often at a relatively early age. For this I believe that the high pressure at which men live, and the habit of working the machine to its maximum capacity, are responsible, rather than excess in eating and drinking, or than any special prevalence of syphilis. Angiosclerosis, creeping on slowly but surely, 'with no pace perceived,' is the Nemesis through which Nature exacts retributive justice for the transgression of her laws —coming to one as an apoplexy, to another as an early Bright's disease, to a third as an aneurysm, and to a fourth as anginapectoris, too often slitting 'the thin spun life' in the fifth decade, at the very time when success seems assured. Nowhere do we see such an element of tragic sadness as in many of these cases. A man who has early risen and late taken rest, who has eaten the bread of carefulness, striving for success in commercial, professional, or political life, after a few years of incessant toil reaches the point where he can say, perhaps with just satisfaction, 'Soul, thou hast much goods laid up for many years; take thine ease,' all unconscious that the fell sergeant has already issued the warrant. How true to life is Hawthorne in the House of Seven Gables. To Judge Pyncheon, who has experienced a mere dimness of sight and a throbbing at the heart—nothing more—and in whose grasp was the meed for which he had fought and toiled and climbed and crept; to him, as he sat in the old oaken chair of his grandfather's, thinking of the crowning success of his life, so near at hand, the avenger came through the arteries."

DISCUSSION.

Dr. F. B. Wynn, of Indianapolis: The subject which Dr. Kimberlin has presented so beautifully to us is one in this country which is of interest only second to tuberculosis in the field of medicine. I think America is the home of arteriosclerosis, and it is the home of it because that is where the American disease is found—neurasthenia. In reviewing very briefly this subject it is well, I think, to refresh our minds as to the factors entering into the hardening of vessels. Now when we classify these toxic agents giving rise to sclerosis, we are most accustomed to speak of alcohol as the principal one, and no doubt it is. There are others, also, which may be ingested as food or as beverages which may induce these changes, just in what manner perhaps we do not know. But they give rise to this sclerosis of the vessels. Now, under the head of toxic substances, perhaps the largest group after all are those toxins produced within the body, by germ processes, by fermentation. This is true of syphilis, a germ disease, no doubt. It is true of rheumatism or gout, and gastrointestinal disorders attended by fermentation, with the production and absorption of substances which act upon the vascular system through the nervous system and give rise to this vascular sclerosis.

We must consider another group of cases which are purely physical in character, in which there is heightened blood pressure incident to life. Prize fighters break early from arterial degeneration. It is purely physical, the tension of their life. And it is not the prize fighters alone, but all trained athletes, football players, etc. I saw such a case within two days. Now we find it not alone among those given to pleasures and athletic pursuits, but in the man who labors with his hands to excess—works too hard. He breaks because of the increased tension incident to his mode of life. This is why the washerwoman comes to premature old age.

We come now to the third group of cases, which I think we are not to reckon wholly as toxic or wholly as physical, but as arising indirectly through the nervous system, and I believe this is perhaps the most important group after all, even exceeding that due to alcohol. I think oftentimes men suffer with Bright's dis-

ease and attribute it to alcohol; that it is not after all due to alcohol, but that is a contributing cause. Have you not known that a man who becomes a debauchee is nearly always a person of neurotic temperament and comes into the habit because of the fact that he is worn and tired and depressed? That is the neurasthenic state that leads to the alcohol habit. The neurasthenia and the alcohol go hand in hand to bring on the sclerosis. I do believe in this country that the preceding neurasthenic state is a factor of the greatest importance indeed in the production of this condition.

Dr. C. S. Bond, of Richmond: This is one of the most important subjects that could possibly be brought before us. As an instance of that fact, I have just come back from the meeting of the Association of American Physicians. There were nine papers before that association involving some phase of this subject of sclerosis, shownig the importance of the subject. Two of these papers were upon experimental sclerosis. Dr. Joseph Miller, of Chicago, has been making experiments upon rabbits with nicotine, injecting them over a year's time, with the production of sclerosis in the intima of these rabbits. Nearly every one after a while will be involved. Then, curiously enough, Dr. Adler, a brother of Felix Adler, of New York City, has experimented, not only in injecting nicotine, but has subjected the animals in inclosures to the vapor of nicotine over long intervals of time. Now these men are not fanatics. They represent our very best men. They get sclerosis in these cases. I had a paper before the Association on a subject which I have been working at for twenty years. It is on sclerosis from alimentary toxins. Twenty-three or twenty-four years ago I began experiments in regard to Bright's disease—to those causes which precede Bright's disease, and curiously enough I came very near imposing a new name upon the medical profession. I found nearly all these cases had evidence of Bright's disease, but had no albumen. I kept a careful record of these people. I collected some two hundred cases, and as they lapsed into cases of Bright's disease after a time, running the ordinary course, I gradually eliminated that class from the class which did not. There were 150 of these cases. After eliminating and taking out those due to alcohol, I have still left 100 case which ran from five

to twenty years, none less than five years. I reported at Washington city 100 of these cases which had run from five to fifteen years with alimentary disturbances. You might say that was secondary. After a time these cases, many of them, which have been subjects of enlargement of the stomach due to motor insufficiency and hyperchlorhydria, and so on—of these cases after five to fifteen years, thirty per cent. have lapsed into sclerosis. I think it is a matter important enough, because it is considered still in dispute, to make mention of it here.

Dr. A. E. Sterne, of Indianapolis: I, too, would like to emphasize the extreme importance of a consideration of the tension in the arterial system, and notably in that portion of the arterial system which can be so readily discerned. I think we neglect to make any clinical record of our work. It is true it is not easy to note arterial tension. We have not sufficient instruments. We have only one good one, and that is the Erlanger. Among the smaller instruments not even the new one from England within the last half year is satisfactory, and we must have other guides to lead us. Many years' examination along ordinary lines will give us definite results. There is not a day passes that I do not see from one to several cases. In neurasthenia, a condition we call a disease, but which is in reality a syndrome of other disease, we will find there commonly increased pressure even to a capillary pulse. We are told it is due to Bright's disease or aortic insufficiency; but we find it in neurasthenia, where there is an absence of aortic lesion or kidney lesion. Now it is an error to slap these cases on the back and say "You have got the blues (hypochondria); nothing the matter with you." These cases do very well for a while when they go abroad, but in a few months they are in the same condition, because you have neglected the fundamental root of the evil, that mysterious system, the sympathetic nervous system. It is not the brain or the spinal cord, but the automatic nervous system which has control of the vasomotor system. Now there is one point, whenever you find a case presenting these vague neurasthenic symptoms, where you have a degree of tension which is apparent and bounding, with no apparent hardening—where you have increased tension to bring about a visible bounding of the

blood-vessels with absolute discrepancy in force on the part of the heart, we must look for peripheral tension. It can not be anything else, and then we should seek for the underlying causes, and nine times out of ten we will find them eventually, whether from metabolism, or from physical or mechanical causes.

Dr. Kimberlin, closing: I wish to call attention to only one point, and that is the frequency with which we make a mistake in the diagnosis. We are derelict in handling a class of patients that certainly offer opportunities for favorable treatment if we are only capable of making a correct diagnosis. The many cases which come to us from our neighbor and go to our next door neighbor that are ordinarily treated as neurotics, will be lessened when we employ means to give us accuracy in our observations. We look for the grosser changes in these cases and are satisfied to see them in the later stages. We do not see them when we might do them service. The recognition of faulty metabolism, high nerve tension, high blood tension, the influence of the various toxins, would certainly place this class of patients where we might be able to render them most valuable service. Yet it is not possible to control men of strong character and strong ways unless we have a positive thing to point to. It is like a blood count in diagnosis or treatment. You can tell him he has ten thousand leucocytes, and he believes it because he doesn't know any better. The same way with the blood pressure. He is not in a position to deny it; consequently you are able to control him. He will change his business and do many other things when it is not merely a matter of argument and when it conflicts with his interests. And so I make a plea for a more careful and honest study of this condition. We are not exactly honest. They come to us with perverted notions, and we turn them aside without proper effort to diagnose their cases, and they go to the neurologist when they do not belong there. We want to examine them and remember they are the subjects of organic disease. Dr. Neu says that in his investigations he found that only three out of something like a hundred were free from changes in the vessels, and we ought to be sure they do not get by us without making a proper effort to make an early diagnosis.

OBSERVATIONS BASED UPON FIVE HUNDRED OPERATIONS FOR APPENDICITIS.

BY THOMAS B. EASTMAN, M. D., INDIANAPOLIS, IND.

It is the purpose of this paper to note certain observations made by the writer in a series of five hundred cases of appendicitis, the operations having been performed either by the writer or his brother, Dr. Joseph Rilus Eastman. For the most part, the ideas expressed are in accord with the accepted teaching; but where they do not accord with such teaching, no apology is offered, as the paper purports to represent nothing more or less than opinions of such value as may be formed in a careful study of such a number of cases. No radical views are expressed, and while some competent operators may disagree with all or part of the writer's ideas, they at least have whatever value may attach to an operating-room rather than to a laboratory or dead-house experience.

The importance of prompt and early diagnosis can hardly be overestimated, and that the mortality following operations for appendicitis has been so greatly reduced during the past few years is due in no small degree to the attending physician, who, from his own clinical observations and from the teaching of operators, is gradually coming to realize that there is a time above all others when operations should be made.

The refusal of the patient or family to submit to operation has often served to delay recommended measures for relief, but the attending physician has not always appreciated his responsibility in this matter, and it is a source of regret that some have not yet learned a lesson. On the other hand, the number of those physicians who have seen fit to place themselves behind the shield of what they are pleased to call "conservatism" is most happily decreasing. We take it that to be conservative means to conserve life, and, so far as this disease is concerned, we are fully satisfied

that this false conservatism has cost vastly more lives than has the most rampant radicalism.

The division of the course of the disease into hours and days according to its duration is not always reliable, as it is readily conceived that pathological processes do not proceed by the clock, but for purposes of convenience we may consider the time for operative procedure in four periods: First, within the first forty-eight hours; second, from the end of this period to the fifth or sixth day; third, from the sixth day on; and fourth, the interval. At the present day, one may say without fear of any considerable opposition that the early operation is unquestionably and unequivocally the operation of election. The condition in and around the appendix, the limited area of inflammation, the absence of adhesions, the absence of pus, the fact that we operate almost surely before perforation or gangrene shall have occurred, the general condition of the patient, the unlowered vitality, the uninvaded lymphatics, and last, but not least, the low mortality resulting from operations made in this stage by competent men, seem to the writer almost to preclude argument upon this question.

It is in the second stage, however, where it behooves the surgeon to use his most careful judgment as to the time for surgical intervention. In this stage, while the operation should be made in a large majority of cases, the dictum, "operate as soon as the diagnosis is made," can not be absolute.

Take a case of appendicitis of seventy-two hours' duration, which is not to be operated, and consider what the subsequent history of the case may be. The further pathologic process may be divided into two classes: first, those favorable to the patient; and second, those unfavorable. Among those favorable, we have—

1. The infectious material may escape into the cecum via the appendix.

2. The inflammation may become circumscribed and limited to the lymphatics in the immediate vicinity of the appendix.

3. There may result an extra-appendiceal abscess which may rupture into an adherent coil of intestine.

4. There may result a quiescent abscess.

Among those unfavorable:

1. There may develop a diffuse general suppurative peritonitis.

2. If there be a circumscribed abscess, there may be an iliac thrombophlebitis and infection of the venous circulation, resulting in embolism infarcts and secondary abscess.

3. A portal venous branch may thrombose and hepatic abscess or pylephlebitis result.

4. The infection may by various channels reach the genito-urinary tract, gall-bladder, liver, or lung (after Murphy).

In so far as those conditions which have been noted above as unfavorable are concerned, it is readily conceded that the sooner operation is made the better. The same may be said concerning certain of those conditions in the class noted as favorable, but the cases which should be considered as exceptions are those in which the patient shows but little general invasion of the infection, the pulse has continued good, the temperature curve is satisfactory, the secretions or excretions active and the patient's general condition good. In these cases, while it may be realized that an abscess is in the process of development, it is at the same time evident that nature is more than holding his own against the disease.

Organic adhesions do not develop under five days, and in a certain proportion of cases, where nature is thus walling off a pus cavity and protecting the abdominal cavity, it is occasionally unwise to interfere and break up these adhesions. The wisdom of the old maxim, "*ubi pus ibi evacua*," is not questioned, but the wisdom of evacuating this pus, as must often be done by the best operators, into the free and hitherto uncontaminated abdominal cavity, is most seriously questioned. In many of these cases, let alone, the abscess sac becomes adherent to the abdominal wall and the best of drainage may be accomplished by a simple incision through this structure, or, at least, it develops in such a way as to render drainage possible without entering the cavity. In the third and fourth classes of cases there is generally no question as to the advisability of operation, but even some of these third-class cases may be left to the interval.

In cases where we do not expect to find pus or use drainage, we

employ the gridiron incision, severing all structures in the direction of their fibers, and in this connection it is well to point out that in enlarging such an incision the tendency to cut transversely the fibers of the muscles, the operator not taking the trouble to split the muscle fibers, as was done in the initial operation, is bad, as such procedure is likely to result in an unnecessarily weakened abdominal wall. In abscess cases the incision is made straight through the wall, and its location with reference to the abscess sac depends upon whether or not the sac is expected to be found adherent to the abdominal wall or whether we expect to evacuate the abscess well toward the flank, as it were, between the weather boards and the plaster.

The gridiron incision is impracticable in abscess cases, since being, in a way, a self-closing incision, it interferes with the drainage. We make large incisions to the end that we may have a good view of all the tissues involved in the pathologic process. The incision made, the appendix is located as follows: Placing the finger upon the peritoneum at the right of the incision and following the peritoneum around the flank, the first intestine to come in contact with this finger must necessarily be the lower portion of the ascending colon. The cecum is then easily grasped, withdrawn through the wound, and the appendix exposed, or if the cecum and appendix be adherent, the latter may easily be located once the cecum is thus under the finger. In our opinion, it is important to withdraw the cecum sufficiently well up to have the appendix well in view. To attempt to work in the abdominal cavity not only tends to render the procedure more difficult, but renders infection more probable. But little cecum need be exposed, and that little is easily protected. Of course, this can not always be done where adhesions are dense. In clamping the appendix, we use either a simple hemostatic clamp or the forceps with the protecting shield designed by my brother. In cutting off the appendix with the cautery, the heat imparted to the jaws of the forceps tends to sterilize all the stump within the grasp of the forceps. Where we use a simple clamp, we do not use carbolic acid to cauterize the stump, because, on account of the small

amount of tissue reached by the acid, this procedure looks like child's play.

In tying off the meso-appendix it is well not to have the ligature approach the wall of the appendix too closely, for, if it does, it renders the turning in of the stump difficult. If it is introduced close to the wall of the appendix, the meso-appendix should be dissected down to a point at least a quarter of an inch below where the lower border of the clamp is to be placed.

In our work on the appendix, as well as in all our intestinal work, for the twelve months preceding February 1st, we had used the Pagenstecher celloiden linen. Since the latter date we have used von Brun's hemp. Either one of these suture materials is vastly superior to catgut for several reasons. They are much more easily manipulated, they do not curl up in the hands, they tie with a firmer and smaller knot, their caliber is much smaller, they allow of a much more accurate coaptation of the parts, they are of such firm texture as to render invasion of bacteria improbable, they are of positive tensile strength, and are capable of unquestionable sterilization.

It is important that the purse-string suture be placed at sufficient distance from the clamp to insure perfect inversion of the appendix. The cecum is generally large enough, so there need be no fear of narrowing the lumen. We regard the placing of a ligature around the stump as bad practice, as it leaves an infected area tied off and with no chance of drainage. We have in certain cases, owing to the dense adhesions which rendered the withdrawal of the cecum from the cavity impossible, in emergency operations by lamp-light and in diffuse septic peritonitis, trusted to the simple ligature of the appendix. However, in all these cases we have used drainage. We leave the purse-string suture and the ligature around the meso-appendix long and bring them together in such a way that the cut edge of the meso-appendix lies in contact with the cecum at the point from which the appendix has been removed, and thus leave absolutely no raw surfaces within the cavity.

The technique in simple not infected cases has reached a stage

where it may be considered satisfactory. It is in the infected cases where we may hope for improvement. These cases may be divided, according to Van Buren Knott, into three classes: First, the more or less localized peritoneal inspection in which the general peritoneal cavity is not protected by limited adhesion; second, an infection sharply localized and circumscribed, the general cavity of the peritoneum being protected by a wall of adhesions; third, a diffuse, widespread infection of the entire peritoneal cavity.

The first class embraces those cases in which, as stated above, we occasionally see fit to delay. Oftentimes the existence of this condition is not suspected. The appendix is removed, and every point to which fluids may gravitate is carefully inspected and as carefully mopped out. In females a vaginal puncture is made and drainage instituted by this route. In males we use a large split rubber drainage-tube carrying gauze, making sure that it not only reaches the dependent pouches, but that it will remain there, and that, if possible, the movements of the intestines will not bend it so as to obstruct the drainage. The tube should be of stiff and not easily collapsible rubber. We never trust to simple gauze drainage, for the reason that it rarely drains. Oftentimes hernia will result from the use of large drainage-tubes, but what doth it profit a man if he prevents a hernia and gets a funeral.

In the second class—that is, where the infection is well walled off—our one aim is to drain the abscess without exposing the general abdominal cavity, and with careful study as to the point for incision this can be more commonly done than is generally believed. Where the drainage can not be instituted without invasion of the general cavity, we feel that considerable time spent in building up a cofferdam is time well spent. Unless the appendix presents plainly, and can be removed easily, we can not remove it, and make a habit of stating to the patient prior to the operation that he or she may require a second operation for the cure of the hernia or removal of the appendix, or for both. In cases where the general cavity has been avoided, simple drainage by tube-covered gauze is used, but where we have invaded the peritoneal

cavity we take pains to see that the abscess drains externally and not into the cavity.

In the third class, that of diffuse septic peritonitis, wherein we have that vicious form of inflammation which involves the whole peritoneum, there are two cardinal points in procedure—rapidity of operating and drainage that drains. We make a free median incision, and, if the patient has strength enough to warrant it, we remove the appendix, simply tying off the meso-appendix and the appendix without any attempt at inversion. We then cleanse the cavity, looking well into all dependent pouches. In the females we use the vaginal puncture and drain as above described. In the male we place the tube-covered gauze in the recto-vesical pouch and out the lower angle of the incision. In short, we do as little as we possibly can and still remove the cause and establish thorough drainage. In all our abscess cases we place our patient in the exaggerated Fowler position, and believe that the introduction of this detail in the after-treatment of appendicitis has had much to do with the present lowered mortality.

DISCUSSION.

Dr. E. D. Clark, of Indianapolis: Dr. Eastman says in his experience he is getting fewer pus cases to operate than in former years. This is most encouraging. Dr. Kelly says in his recent article that the percentage of pus cases in Johns Hopkins in the last three years has been as great as in the preceding ten years. Our doctors in this part of the country no doubt are becoming wider awake to this subject than in Virginia, Maryland and that section.

Some things that necessarily come up in appendicitis make us take into consideration the question whether or not the patient should be operated on in every case. I take the view that every patient should be operated on or at least all cases not moribund, because of the fact that the mild cases are the cases that frequently give us the greatest trouble. You can have an inflamed appendix that will go on to slight suppuration, in the appendix and in the

tissue surrounding it, and owing to its rich vascularity and the anastomosis of veins and arteries there is great danger of the involvement of other organs. In looking over the statistics of liver abscess we find the great majority of them come from mild, chronic cases of appendicitis and not from acute cases. When the lungs and liver are the lodging place for septic thrombi of course the case is an absolutely hopeless one. Early operation I believe is the very best treatment for appendicitis.

Dr. Eastman spoke of evacuating abscesses not adherent to the abdominal wall where the peritoneum is almost certainly soiled. I am not at all afraid of pus in these abscess cases. I believe if little trauma is done the intestines, the omentum and the structures in the abdominal cavity, that the peritoneum is capable of taking care of the infective material very well. I believe the danger is far greater in allowing abscess cavities to remain even though you run the risk in evacuating the abscess of infecting the cavity. Halsted has performed some four or five hundred experiments in the peritoneal cavity of dogs, where he has implanted the staphylococcus aureus and the streptococcus pyogenes, and he found that he could implant them with impunity so long as he did not injure any of the intestines or other structures. When we have infection plus trauma then suppuration is the result.

The drainage-tube is another subject of interest. I believe many times it does as much injury as good. A stiff drainage-tube making pressure on the intestine has frequently been the cause of death due to obstruction of the bowels. I like the small cigarette drain.

The quicker the profession comes to the idea that all cases of appendicitis should be operated upon, in my judgment, the less will be the death rate. But when a surgeon says a case will not recover without operation he is making a statement that is radical and wrong, because they will get well, and they will get well from the most virulent forms. But he don't know which one will get well. You may have mild cases of appendicitis that will result in secondary abscess of the liver; while on the other hand you may have a virulent case that will get well, but with the possibility that it will recur and cause the death of the patient.

Dr. O. G. Pfaff, of Indianapolis: As to the treatment of appendicitis, and that is the valuable feature of this paper, among surgeons there is no question, and among the laity there is getting to be a wisdom that is rapidly pressing the rank and file of the profession to a firmer opinion on this subject. There is only one side to appendicitis and that is the surgical side. The question of technique is not one that I will care to discuss here, but the question of what to do for appendicitis is one that we can still have something to say about, for the reason that in all associations where surgeons discuss these subjects there is just one voice. But in spite of this fact there is a widespread feeling that it can be cured, or at least is to be treated by medical conservative means. They will continue to do it, and do do it. We get cases late, and lots of them are pus cases. We do not get them early. We get them after twenty-four or forty-eight hours, or later. It won't do to say they won't get well without operation. But the matter must be settled by statistics. In a certain list of cases it is safe to say perhaps forty per cent. of the cases will die from the attack, whether first or second or tenth; but in appendicitis forty per cent. will die. There is probably another thirty per cent. that have bad health—chronic appendicitis—recurrent appendicitis. Then some of them get well and never have recurrence. No man can tell me any way by which within the first twenty-four hours we can predict what the subsequent course of the attack will be. The temperature is no guide; the pain has nothing to do with it; it can not be estimated. Just as in diphtheria. Who would sit by the side of a case of diphtheria and attempt to diagnose and tell anything about the outcome? So it is with the outcome in appendicitis. Now, at the risk of being called radical, I am sure the right position is to say that it is surgical from the beginning, except to hold the patient in the best possible condition until we can get to the operation. I do believe the only cases to be debated are the moribund cases with a leaky skin and thready pulse, the cases to be treated by the starvation method of Ochsner. And Ochsner treats only such cases in that way. He says operate in every case. I believe when there is a case that looks like appendi-

citis if the physician is in doubt about it he should even then call in the surgeon.

Dr. Chas. Stoltz, of South Bend: I have never been able to see the value of classification in appendicitis. I have made a few post-mortems on cases that died within the first thirty-six hours without any history of previous attacks. I have seen others, again, who have had repeated sharp attacks, with high temperature and profound disturbance. I have seen them operated at any time, finding that the trouble was due to some irritative substance and they could have lived without a fatal issue many years.

The matter of adhesions, I think, is one that troubles all of us and I believe the lines laid down by the first speaker is the direction in which the chapters on appendicitis will be rewritten. I believe the dictum that we must not break up adhesions has been the means of patients going on to death, because the difficulty was not removed. I remember a case recently in which I cut out a gangrenous appendix in which I thought we had done good work. The adhesions were walled off, but in ten days he had marked intestinal obstruction and I had to re-operate. That wasn't complete surgery. He had hiccough and the peritonitis was general. Fortunately he got well, but after a long convalescence.

Price said at Detroit last spring, "Break down adhesions; get them out of there; they cause trouble." Your abdominal cavity will stand some trauma. It depends somewhat upon the infection. The streptococcus will give more trouble than the staphylococcus. I do not believe you are doing complete surgery when you leave adhesions. Another thing: If the adhesions are such that they involve practically the whole circumference of the intestine you are almost sure to have obstruction follow. So that an adhesion may be bad as well as good.

There is another thing that I do not believe we will stand by. Most drainage don't drain. I think it is a difficult thing to know whether you are getting drainage no matter what form of drainage you use. The intestines become adherent. They wall off everything from the drainage-tube. You think you have got drainage but you do not drain the cavity. You have no serum coming

out. I believe a valuable thing in the treatment of these cases where peritonitis has developed is the plan Murphy advocates in all his cases from whatever cause, and that is the very slow injection of normal salt solution by the rectum. He, as you know, puts the container only six or eight inches above the patient and it trickles in very slowly, and by that means gallons and gallons can be taken up by the intestinal tract without being expelled. This dilutes the poisoned blood serum and the results I believe are valuable.

Dr. A. B. Graham, of Indianapolis: I have had the pleasure of being associated with Dr. George J. Cook the last eight years, who is known as a conservative man in the treatment of appendicitis, and yet I do not believe the doctor will take me to task for saying that every case should be operated upon as soon as the diagnosis is made. Surgeons have made grand progress in the treatment of this disease. They have got the mortality down between one and two per cent. I am sorry to hear the gentleman who has just preceded me say that we should interfere more with adhesions. Break up adhesions and get out the appendix, but let the rest alone. It is surprising how nature will take care of adhesions following appendicitis in which large abscesses are evacuated. I have seen three cases of hernia operated after abscess, and strange to say we found no adhesions at all, nature having taken care of all of them.

Now the best way to get hold of this subject, whether surgical or medical, is to report a few statistics I have collected. In regard to the surgical side we can report no better statistics than Ochsner's 1,000 cases, every case suffering from appendicitis, and all cases were included in these statistics:

Chronic or interval cases, 500; 5 deaths; mortality, 5 per cent.
Acute when operated, 255; 5 deaths; mortality 1.9 per cent.
Acute peritonitis; 55 operated; no deaths.
Acute, with abscess, 117 operated; 4 deaths; 3.4 per cent.
Acute, diffuse peritonitis; 33 operated; 10 deaths; 30 per cent.
Total, 1,000 cases, 22 deaths; mortality, 2.2 per cent.
Medical statistics of Sali: 7,213 cases; 6,740 of these were not

operated upon and 591 died, a mortality of 8.8 per cent.; 4,593 out of this 7,000 had recurrence; 3,635 had a second recurrence; thereby bringing the mortality which Dr. Pfaff has told us was somewhere in the neighborhood of thirty or forty per cent. treated by medicinal means. I do not know of any better argument than to present statistics of that kind. And we can go further and take Ochsner's 500 cases with one death. I can not conceive of anything better than that. It should be operated at once when you can make a positive diagnosis.

Dr. G. B. M. Bowers, of Richmond: I want to say a word about two or three things. One of these is drainage. I believe in these cases if you put in small drains we should drain through a stab wound. In that way we would be less liable to have hernia. Your wound will close up quickly and the stab wound will contract down so that hernia is less likely.

I am sorry the doctors do not complete the operation in cases of pus. I believe there is nothing that causes the death rate to be higher than a brilliant operation, especially in those cases where they have dulness, temperature 100 to 101; pulse 96. You have new absorption surfaces by breaking down adhesions and early deaths. But if you will open up these cases with short anesthesia, put in a simple drain and get out you will have a very small death rate.

I wish to speak of a method I used in two cases with abscess. Instead of cutting off the appendix I separated the adhesions down to it and with a forceps clamped the appendix near the base and cut it off and introduced gauze around the forceps which acted as drainage, and left it on for 48 to 72 hours. There was no fecal fistulas and the wound closed quickly, and after a year or a year and a half there has been no secondary trouble.

As to the incision in those cases in which we suspect there are different pockets of pus—general peritonitis cases—where we feel like breaking down adhesions, I feel that the central incision is better. I see no reason why we should make a side incision if we want to treat the whole cavity. We can do better with our drainage.

In regard to breaking up all adhesions, one gentleman says drainage is not worth much. Consequently breaking up adhesions does but one thing, and that is to open up raw surfaces for infection. I am sorry to see surgeons advocate early operation of all cases seen early. One of the leading surgeons of Indiana said a short time ago that if he could see a case early he could decide upon those to be operated early and those to be operated late. I do not believe it is possible for any man to know which case should and which should not be operated.

Dr. T. B. Eastman, of Indianapolis: I wish simply to say that I am firmly convinced that appendicitis is a surgical disease, and if we operate on all cases within the first 48 or 72 hours they will practically all get well; and I think we ought to operate on practically all the other cases, and I believe it the duty of the attending physician as soon as he has made a diagnosis of appendicitis or if he is in doubt, to send for a surgeon, or at least himself take out that appendix.

THE VALUE OF TREATMENT IN PARALYSIS.

BY URBANA SPINK, M. D., OF INDIANAPOLIS.

Much has been written on the classification of nervous diseases, but very little stress has been laid upon the treatment, because it was thought that treatment was of little or no value in such cases. So the disease was left to develop slowly or rapidly, as the case may be, unless it happened that the patient gave a history of syphilis, in which case one might hope for improvement under specific treatment. But very little attention has been paid to the local application of massage and electricity, baths, exercise and rest, all of which we have found to yield such good results. But, to get results from such measures, the physician must have his patient directly under his charge, so that he can personally surpervise the treatments and see that they are systematically carcied out and not left to the discretion or pleasure of the patient. For that reason it is difficult to treat a patient at his home. He should be in an institution where the most rigid care and watchfulness can be kept over his treatment, and the patient kept encouraged so that he will not neglect his part in the recovery.

It is not my intention to take up the various diseases which cause paralysis, but to deal with it as a symptom only, and the treatments which I will mention are purely symptomatic. The treatment of the disease itself must necessarily vary, and will only be touched upon, if mentioned at all, in this paper.

Paralysis, in most instances is looked upon as practically hopeless, except for what time can do, and for this reason constitutes one of the most dreaded of human afflictions. So little has been accomplished for the relief of this trouble that I have felt justified in reporting a few cases that have come under my observation since my connection with Dr. Fletcher's sanatorium, and this paper is merely to show what careful and persistent treatment will do, for some cases at least.

The etiology of a case necessarily regulates to a certain extent the prognosis, but the writer believes that no case ought to be considered hopeless, and that it is always worth while at least to give the patient all the chances possible for recovery. Generally speaking, syphilis is the most common cause of nervous disorders with resulting paralysis, and if taken in time such cases are the most hopeful because here we have a specific remedy. We constantly come in contact with such patients, and the majority recover unless the disease has developed to such an extent that it is impossible to control it. Even at times in seemingly hopeless cases the improvement is remarkable. I have in mind a patient who was brought to the sanatorium in a very critical condition both in body and mind. She had contracted syphilis a number of years before but had had no recent manifestations of it, but it was thought that her present trouble was due to that infection, combined with worry and overwork. There was probably an element of hysteria in the case, but the paralysis was undoubtedly of organic origin.

History of present illness For some months she had been "running down," very nervous, losing flesh. There had been perceptible weakness and wasting of lower extremities. Finally typhoid fever developed, which ran a very irregular course and left her emaciated, partially paralyzed and with many delusions. In this condition she was brought to the sanatorium. On examination we found that the lower extremities were completely paralyzed from the hips down, both as to sensation and motion. Reflexes were absent. There was incontinence of urine. There was no paralysis at all in the upper part of the body. The patient's nervous condition made it very difficult for us to do anything for her at first. She had the delusion that everyone was trying to harm her, and for days she had eaten very little for fear of being poisoned. She cried continuously, would listen to no reason whatever, and what medicine was given had either to be forced or given hypodermatically. Gradually, with much tact and patience, we were able to control her and gain her confidence. She was put on the bromides and iodides, and the following treatments: Gentle but thorough massage was given daily, great care being taken to follow the affected muscles from origin to insertion; galvanic

electricity was applied to the spine and the faradic to the muscles. In this way the muscles were stimulated, the circulation improved and the affected muscles given sufficient exercise. Every other day the patient was given an electric tub bath, that is to say, she was put in a tub of water charged with electricity and allowed to remain from five to eight minutes. As she grew stronger she was given an electric light bath twice a week. In this the patient is put in a cabinet on a glass slab surrounded by electric lights and left there until perspiring freely. After giving these baths the nurse must be careful to keep the patient well wrapped to prevent taking cold, and to insist upon her resting in bed at least one hour after a bath. Exercises in the gymnasium were an important treatment for this patient. These were begun a few days after she entered the sanatorium and were kept up during her stay, increasing the exercises as her strength increased. The exercises consisted of breathing exercises and trunk movements. Then the feet were strapped in a foot and ankle machine by which rotary movements were given which exercised the muscles of the ankle and also of the knee. A similar apparatus gave the flexion and extension movements of the ankle. At first these movements had to be done entirely by the gymnasium teacher, but as the muscles grew stronger the patient was able to use them herself. Mentally the patient improved from the first, and rapidly. It was about two weeks before any improvement was noticed in the paralysis. Sensation was first to return, and this first in the toes, in response to the actinic ray, which was given every other day. The patient could feel the actinic ray in the foot and part way up the leg before there was any power of motion. This followed gradually, also beginning in the toes. It was not long before the patient could stand, held on either side by a nurse, but it was some time before she could take a step even when assisted. There was a natural tendency to pes varus which retarded somewhat the improvement. As soon as the patient was able to take a step, braces were put on extending from the ankle to the middle of the thigh. These gave much support and also gave the patient confidence. The patient was then allowed to use crutches and with the aid of them she

was able to get around pretty well. In a few weeks the braces were taken off as they were cumbersome and no longer needed. The patient got around remarkably well with crutches, getting in and out of a carriage with very little difficulty. At the end of four months she went home, returning every other day for the actinic ray, static spray and exercises. She soon discarded the crutches and gradually discontinued the treatments. She is now in perfect health and can walk as well as ever.

Another case with history of syphilis is that of a young woman in whom paralysis of lower extremities was combined with severe nervous and mental symptoms. The symptoms cleared up after a long siege, under iodides combined with treatments such as those mentioned above.

A very typical and interesting case of Landry's paralysis recovered under combined systemic and local treatments. Mr. D., farmer, aged 50 years. The disease was of about six weeks duration when I first saw him. It had begun with numbness in fingers and toes, rapidly extending to the trunk and followed by loss of motion. When brought to the sanatorium paralysis was complete in both legs and arms. Patient was unable to stand even when assisted. There was some slight motion in the elbow but not enough for him to get his hands to his head. The patient was very much emaciated and the hands had the characteristic claw-like appearance. The muscles of deglutition were slightly affected. The patient had eaten very little for days, partly because it was difficult for him to swallow and partly because his family had been advised not to give him much to eat. The voice had a peculiar rasping sound. The skin was dry and scaly, the tendon reflexes were absent. A diagnosis of Landry's paralysis was made, which diagnosis was confirmed by consulting physicians. We were not very hopeful because the disease was so far advanced. However, the patient was put on a full and nourishing diet and a course of treatment begun similar to the one detailed above. We were rewarded by a gradual and steady improvement. Sensation first returned in fingers and toes, followed in a short time by motion. The skin became softer and more pliable, the patient gained

in weight, and in one month's time was able to stand alone and to walk with some assistance. This patient made a more rapid recovery because he was ambitious and intelligent. Treatment was kept up for three months, the patient taking exercise out of doors whenever the weather permitted. At the end of that time the patient could walk well, could use his hands and arms perfectly, only a slight stiffness of the fingers remaining. He had a good appetite, and had gained twenty-eight pounds. He went home and a nurse was sent with him to continue the massage, exercises and faradic electricity for one month. He is now able to attend his farm duties and writes that he is still gaining in strength and weight.

A case of paralysis from suspected chloroform poisoning was one which interested me very much, both on account of the symptoms and the way in which the symptoms yielded to treatment. Mrs. D., six months previous, had had teeth extracted, taking chloroform for the operation. In the course of a few days following she became very much jaundiced and other symptoms developed which led to a diagnosis of gall-stones. The patient was operated upon but no gall-stones were found. A few days after this second operation it was discovered that the patient was paralyzed in both lower extremities. She was very much prostrated from the shock of the operation. She did not rally for several days, and some mental symptoms developed, which, however, soon disappeared (except one—she was very forgetful). The patient was brought to the sanatorium about three weeks after the second operation. The wound had entirely healed. On examination we found complete paralysis of the flexor and extensor muscles of the knee and of the extensors of the foot. She could flex the feet but could not hold them so. They had the characteristic look of dropped feet in multiple neuritis. The hip muscles were not affected. There was no paralysis of the upper extremities, but the patient complained constantly of "pebbly feeling" in fingers and hands. There was extreme hyperesthesia extending from the hips to the toes. The reflexes were absent; the bladder was not affected. There was some atrophy of the muscles, and the patient's general

condition was poor. The treatment consisted of electric tub baths twice a week, electric light baths twice a week, actinic ray and electric massage twice a week. Once a week the legs were given the hot air treatment, the heat being raised to 200 degrees F. Galvanism was applied daily to the spine and static spray to the muscles. Massage and exercises were given daily and the patient taken out of doors when able. Of course these treatments had to be given gradually so as not to overtire the patient. There was noticeable improvement at the end of two weeks; the improvement was steady and comparatively rapid. Hyperesthesia gradually disappeared and the patient was soon able to move feet and toes. She had a great fear of falling even when held on both sides by strong nurses, and it was a month or six weeks before she was able to stand alone, though the muscles seemed to be strong. After she had once stood alone she seemed to have more confidence, and walking was soon accomplished. The gait was stiff and jerky at first and falling of the feet continued for some time, but at the end of four months the patient could walk well and her general health was very good. She was sent home, advised to return twice a week for treatment, which she did for a while, and now seems to be perfectly well.

Case 4 is that of a man 75 years of age who for years had been a very hard drinker, and since his present trouble had come on had been using enormous quantities of morphine. When the patient was brought to the sanatorium he had been paralyzed in the lower extremities for several weeks. The paralysis had come on gradually, beginning with numbness in the toes. He suffered greatly from severe pains in legs and feet. He still had pretty good use of his arms, but the numbness in his fingers was very annoying and prevented him using them to any great extent. There was noticeable atrophy of muscles both of legs and arms. This case was complicated with liver and bowel trouble of very serious nature. The liver was very much enlarged and the patient suffered greatly from severe pains in the abdomen. He was put on increasing doses of iodides. As little morphine as possible was given, and various other methods were resorted to to relieve pain and in-

duce sleep. The treatment for the paralytic symptoms was similar to others, varying with the special needs and strength of the patient. In a couple of weeks the man showed considerable improvement in his general condition as well as in the paralysis. Sensation returned to feet and legs and he was able to use his hands much better. In two more weeks he was able to stand alone and could take a few steps. We had begun to feel encouraged about him, but unfortunately the liver trouble suddenly grew rapidly worse. The patient was taken with nausea and vomiting, was unable to retain anything on his stomach, and the abdominal pains were most severe. The skin over the entire body took on a dark brown hue, the patient sank rapidly and died in a few hours. It is possible that if there had not been such serious liver trouble the paralysis might eventually have been cured.

In a number of cases of cerebral hemorrhage I have known the paralysis resulting to yield readily to treatment. When taken in an early stage the muscles do not have time to atrophy, and consequently do not need so much stimulation. I believe that many cases of apoplexy in which the patient has been left in a helpless, hopeless condition, could be greatly benefited if proper care and treatment were given. In that form of hemiplegia associated with hysterical symptoms, which is so common, electricity is very valuable both as a suggestive agent and as a nerve stimulant. Dr. James K. Thatcher reports a case of diphtheritic multiple neuritis in which the galvanic current was used and the patient recovered.

According to Gowers, electricity is successful in the treatment of infantile paralysis. No doubt massage and other forms of light exercise would also be very beneficial. I have had no personal experience in that line. There are on record reports of various cases of paralysis which have been cured by electricity. These cases were investigated and the conclusion was reached that all cases of reported cures were of hysterical origin, no organic trouble being present. It is difficult to say whether this was a correct conclusion or not, but certainly there can be no doubt that electricity combined with other measures is of great value in overcoming the contraction of muscles, in stimulating the nerves, and

in combating muscular atrophy and oedema in cases of undoubted organic origin.

It may be out of place to take up diagnosis in this paper. It certainly requires no skill to determine whether a man is paralyzed or not in any part of his body. But the diagnosis is most important because on that depends the prognosis, and it does require skill to diagnose some forms of nervous troubles from others. And although the writer is convinced that it is important to treat the paralysis no matter what the diagnosis or prognosis may be, we certainly can not hold out the same amount of hope in some cases that we can in others. In tumor of the brain it is difficult and sometimes impossible to determine the size, character and exact location of the growth. Cases have been reported in which diagnosis of cerebellar growth had been made almost with absolute certainty, and yet at the autopsy no such growth was found. A correct diagnosis is important and it is necessary to give all doubtful cases the most careful study and to make a very thorough examination of every part of the body, including the eye, ear, nose, and throat. Headache is a very important symptom, not only in brain tumors, but in all forms of nervous and mental diseases. It is such a common symptom in *all* forms of trouble that we must take into consideration the time, location, and severity, and all this in relation to accompanying symptoms. The reflexes are important diagnostic signs in nervous diseases and should be carefully tested. The differential diagnosis is many times very difficult to the general practitioner, but the gross points of similarity and dissimilarity should be more carefully considered than they usually are.

The prognosis of all nervous disorders, while not so favorable as we hope some day it will be, yet is not so grave as it was some years ago. The progress of brain surgery is slow, but some remarkable things have been accomplished in that line, and more is hoped for in the future. Much can and has been done by placing the patient in suitable surroundings, where he can be carefully watched and where the treatments can be systematically given. The prognosis of the paralytic symptoms depends of course on the

diagnosis, but even where no hope of complete recovery can be given, much can be done in the way of relieving pain and of restoring motion and sensation to the affected parts, by stimulation of the muscles, nerves and circulation.

Paresis will always progress if allowed to take its own course, but in the early stages it is said to be curable. I know of two cases of arrested paresis, where the patients are now practically well. Even in the advanced stages, some relief to the local symptoms has been obtained by massage and electricity. The same is true of locomotor ataxia. There is little hope in the later stages, but it may be arrested in the earlier stages.

It is important in all forms of paralysis to produce nutritive changes, where it is necessary to keep the muscles strong until the lesion is repaired by nature. Galvanism produces these nutritive changes and induces more rapid chemical changes. It is impossible to estimate the exact value of electrical applications, but undoubtedly they are of great use in aiding the nutrition of paralyzed muscles and in giving them proper exercise. There is probably nothing to equal the beneficial results of electricity and massage produced by exciting the functional activity of the various organs which can not be set to work voluntarily because their functions have been suspended by disease.

As you have observed, much the same line of treatment has been carried throughout each case mentioned. I have intended to emphasize only that part of the treatment which bears directly upon the point in question. I believe the benefits derived were due mainly not so much to any one treatment, but to all the treatments combined, and to the care and faithfulness with which each one was given. The electric baths I consider very important because they relax the muscles and stimulate the skin and surface circulation. Galvanism causes decided dilatation of the surface vessels, thus stimulating the natural movement of fluids in the blood-vessels and lymphatics. The daily and systematic exercises tone up the muscles, but these exercises must be carefully and intelligently given so as not to overtax the muscles. It is important of course to have the patient out of doors as much as possible.

Fresh air, thorough massage, carefully following each affected muscle, electricity applied in an intelligent manner, and careful attention to the general condition of the patient, all go to help to the final recovery. The object is to aid nutrition, promote circulation and assist metabolism.

Thus it is important to combat the individual symptoms, even though it is not always possible to affect the process of the disease to which these symptoms are due. Success as a whole depends upon how intelligently each detail of the treatment is carried out.

DISCUSSION.

Dr. A. P. Buchman, of Ft. Wayne: The value of this paper, of course, resides in its title. It is the treatment of paralysis in the different forms. You will notice the essayist says the form of treatment in each case was practically the same, which is a very essential thing if the treatment is carried out specifically. The massage starts the circulation and nutrition—gets things in motion—and as to the electricity, we are unable to say what chemical change it produces, but certainly sufficient to have some effect. But back of the whole of this is the instructions, the tendency to impress upon the patient's mind the possibility of their again recovering the accustomed motion of certain muscles. I fully believe we can get up a collateral nerve circulation through other channels, and this is nearly always the effect of contiuous teaching. If the patient is taught to keep his mind upon certain muscular movements, and then make the muscular movements in response, I believe we can get good motion in certain paralyzed muscles that could not otherwise be done. They are usually permitted to allow the paralyzed muscles to remain in an inactive condition and finally to forget their purpose.

Now I fancy the work that has been done by the essayist must be done in a sanatorium. The electric light bath, the high frequency current, together with the stimulation by vibration, I have had a good deal of experience with myself, and I believe I have succeeded in restoring muscular function in a number of cases that would have been hopeless otherwise. But in addition to that

I have added Swedish movements with this one thing in addition —that is to teach the patient to concentrate his attention upon the paralyzed muscles with the intention that they shall respond, and by and by they do. Then, of course, when we come to differentiate between gross lesions and psychic paralysis we have an immense field to work in. Where there is a gross lesion at the base of the paralysis most cases are hopeless; but we do find that many of them are purely of a psychic quality and these are the ones that respond to intelligent treatment.

Dr. A. E. Sterne, of Indianapolis: It seems to me that the effect of the treatment of paralysis can be summed up, as far as prognosis is concerned, about as follows: In all conditions where we deal with paralysis due to peripheral lesions, even though in a way those lesions are total, the prognosis is from fair to good. In case we have a total peripheral lesion with paralysis like the severance of a nerve due to traumatism, the surgical union of these nerve ends with ultimate stimulation with electricity, preferably the alternating current, our results are good. If we have a central lesion, whether it is in the spinal cord or in the brain, the prognosis of treatment is not so good. Where we have a lesion in the anterior motor horns, then through long continued treatment, not weeks nor months, but years, as through the developmental period in children, and through overnutrition of the part treated, we can get a good result. And finally, we can, by surgical measures, attain a good result so far as paraylsis is concerned by either tendon transplantation, or by the newer method of nerve implantation, thus sending impulses through a nerve not diseased to a muscle not diseased. When we have paralysis which results from myopathic disorders that lie in the muscle, then we can alleviate, but I have never known a case where any form of treatment has after any length of time prevented the ultimate total waste of muscular structure. When we have cerebral disease which has brought on a palsy, then the result of treatment is palliative altogether. If we are dealing with a hemorrhage then we may get a resolution of that hemorrhage, and until that occurs the treatment outlined by the essayist is mainly in place. It will

keep the muscle tone up with the prevention of contraction and contractures thereby, and that is the main feature of the treatment in all these cases.

Now the question of braces. I believe the profession is too prone to use braces before proper stimulation by electricity. It is a mistake to weight a weakened limb with apparatus. It is good only for the purpose of preventing two things—shortening, and deformities in the joints through loosening of the joint structures. For no other purpose, to my mind, are braces pertinent, and I should like to impress that upon all of us.

The use of stimulation through electricity and massage is of the utmost importance and should be begun early. It is a great mistake to wait.

Dr. McCaskey: How early?

Dr. Sterne: Right away, to my mind. I make it a practice to begin electrical stimulation even after apoplexy within twenty-four hours.

Dr. McCaskey: What do you do in peripheral disease?

Dr. Sterne: Never in peripheral disease until the inflammatory process may have subsided to a great extent. In cases of infantile paralysis the greatest mistake is to wait until the so-called period of regeneration has taken place; because there we are not dealing with a peripheral palsy, but a central palsy, which deals with the spinal gray matter.

Dr. G. W. McCaskey, of Ft. Wayne: Two or three points occur to me; one is the prognosis and treatment in these cases of paralysis associated with organic disease. I am inclined to think that the prognosis in many of these cases has been regarded as altogether graver than the facts warrant, and the results have not been so good as they would have been had the question been viewed from a different standpoint. The point I want to get at is that after a muscle and peripheral nerve have been paralyzed, we will say by central disease, its permanence depends upon the extent of the lesion, its progressiveness, and finally as to whether there is a

sufficient degree of reparation possible. I believe in many cases of nonprogressive central disease there is a sufficient degree of recovery takes place to make it possible for the re-establishment of function provided proper treatment is carried out. I do not intend to enter into the treatment at present, but the patient should be re-educated in the use of those muscles, and to use those passages of nerve impulse from which they have been blocked for so long a time. If, for instance, a portion of one muscle has been damaged, but with the restoration of the nerve complete, the paralysis may remain permanent if there is not some effort made to re-educate the muscles and start the nerve impulses through the usual channels. I believe I have had experience to justify the belief that the degree of permanent paralysis can be greatly diminished by education.

The only other point is as to the early treatment of these cases, especially where the disease is in the peripheral nerves. Where it is central, of course there is no objection to beginning early; but where peripheral in location I think we should be very cautious about using electricity, because it will do more harm than good, although Dr. Sterne says he would not use it when there is an inflammatory condition present in the structures.

PNEUMONIA IN THE AGED.

BY N. D. COX, M. D., OF SPENCER.

One of the most frequent of the acute, infectious diseases is pneumonia. It is the scourge of old age. The symptoms of the disease in the aged are so different from those in adult life that we may profitably, I think, devote a little time to its consideration.

In childhood, pneumonia presents a much more serious aspect than it does in old age, but the aid to recovery which nature gives at the former age is far greater. The reciprocal echoing back of functional or material disturbances from one organ to another does not take place in old age, and, for this reason, the symptoms and course of pneumonia at this period undergo many and various modifications. The disease is often very deceptive in its symptoms and is not infrequently latent. Senile pneumonia is usually a primary affection, and one reason why it occurs so seldom as a secondary condition is that the acute, infectious diseases to which pneumonia is a common sequel, are of very infrequent occurrence in old age. But, since the discovery of the specific cause for pneumonia, we must regard most of these so-called secondary forms as primary, and we are brought to the recognition of mixed infections. In our standard text-books, no doubt all of you have been impressed with the scanty recognition of senile pneumonia—a disease that, as has been said, is the scourge of the aged, and is different entirely from the acute, croupous pneumonia we find in adult life. If the facts could be learned by a careful autopsy, all, or nearly all, deaths in old people given in death certificates as due to "old age," "heart disease," "exhaustion," "apoplexy," "senilty," could be traced to pneumonia.

Pneumonia in the adult can generally be detected at its onset, for the physical signs are generally well marked, but in old age

the disease is very deceptive in its symptoms and is often latent or hidden unless a careful exploration of the chest is made by the physician.

We very seldom see croupous pneumonia in the aged, but almost always lobular or bronchopneumonia, and the hypostatic or postural forms. Among the predisposing causes are bronchorea, bronchitis, edema causing passive congestion of the dependent portions of the lungs such as we find in the old, bed-ridden from fractures of the hip or leg, or from paralysis, burns and other traumatisims.

The lobular form of pneumonia is as greatly to be dreaded in the aged as in children, as well on account of its frequency as its insiduous onset. We should be very careful not to confound pneumonia in old people with the various ephemeral pyrexias which we frequently find following a cold or indigestion, for senile pneumonia often presents no symptoms of importance. Outside of a feeling of exhaustion, with perhaps shortness of breath, the patient seems to be well and insists on going around and performing their ordinary and accustomed duties. They eat fairly well, sleep as usual perhaps, and complain of nothing specially until they finally feel so exhausted that they take to bed and die most unexpectedly—hence the mortuary reports says "senile decay," "old age," or some other foolish and meaningless name is given as the cause of death. We must remember that in the old there is no chill as a general rule, no pain, seldom any fever, no rusty sputum, no period of incubation such as we find in adult life. Is it not a fact, and should not the physicians, when called to see an old person, always bear this in mind, that the sensibility of the senile organism is so blunted, so obtunded that there is no reaction from the pneumonic poison such as we find in young persons? The pain in the side, which is usually a prominent symptom of the prodromal stage in younger persons and which is caused not always by an accompanying pleurisy, but by a toxic intercostal neuralgia, is usually absent in the aged or is referred incorrectly to some other region.

Senile pneumonia usually runs a rapid and fatal course. The late president of the Boer Republic, Paul Kruger, died in his

chair with this scourge of old age, and Senator Hanna could not battle successfully against the toxins of typhoid and pneumonia combined. When recovery does take place, as it occasionally does, it is usually slow and very tedious, for the areas of engorgement remain behind and keep up a constant irritation of the lung, and fresh inflammation may break out any time and on the slightest provocation.

Death occurs from paralysis of the heart due to the toxic paralysis of the lungs, by suffocation, by filling the bronchi with mucus or pus, or pulmonary apoplexy sometimes closes the scene. If there is any treatment at all for senile pneumonia, it is simple and is more hygienic than it is of drugs. Absolute rest in bed and plenty of fresh air, nutritious, liquid food, stimulants such as strychnia, eggnogg and hot milk and broths are the main indications in managing a case of pneumonia in the aged.

The bowels and kidneys should be carefully looked after, and one movement a day from the bowels with castor oil or warm salt water enemata should be produced. Distilled or pure water should be given freely so as to keep the kidneys going and opium in any of its forms should never be given. Opium is a dangerous drug for old people, for, as a general rule, they are very susceptible to its influence. It blocks all the secretions, puts the kidneys to sleep—a dangerous and fatal thing to do in pneumonia of the old.

Since writing this paper and very recently Miss Susan B. Anthony, "one of the world's greatest women and worthy of honor," passed to the beyond with this scourge of old age. How pitiful her closing words, "To think that I have had more than sixty years of hard struggle for a liberty and then to die without it, seems cruel."

MEDICAL EGOISM VS. MEDICAL ALTRUISM.

BY BADER S. HUNT, M. D., OF WINCHESTER.

Herbert Spencer in his Principles of Psychology has this to say in regard to his having adopted the term Altruism: After giving credit to M. Comte for having coined the word, he says:

"Altruism and altruistic suggesting by their form as well as by their meaning the antithesis of egoism and egoistic, bring quickly and clearly into thought the opposition in the way that benevolence or beneficence and its derivitives do not, because the antitheses are not directly implied by them. This superior suggestiveness greatly facilitates the communication of ethical ideas." That self-preservation is the first law of nature has become axiomatic. This being true, we easily understate how early then the egoistic tendencies outcrop. But the egoistic in man, and animals, too, for that matter, does not obtain to the exclusion of all altruistic tendencies. For low down in the animal scale we witness the parental instinct which will lay down its life in an effort to preserve its own offspring. Egoism appeared early in medical matters; dating from a time when the sure cures for certain ills were only known to certain families or individuals. The same egoistic principle obtains now in the proprietary patent cure-all. The various sects, isms and pathies in medical circles today stand out in bold relief, testifying in the most flaming manner to the egoistic in their adherents. The sectarian schools of medicine in existence at present would soon go down were it not for the fact that much wealth is tied up in buildings and equipment, which would mean much loss to their owners to abandon them.

A purely commercial proposition. They are kept alive of course by the credulity of the human intellect; a credulity which is almost as receptive as in the days of the Salem witchcraft. We boast of our educated masses, and the extra education of the

classes, which of course is true; but our intellects have not developed with the education received. In other words, common horse sense is as scarce an article, as applied to things medical by the laity, as it was in the days of our forefathers.

In support of this assertion I point you to the followers of Dowie, Mrs. Eddy, Weltner and the innumerable impostors before and since. It is this credulity of the human mind that develops the egoistic in things medical. One egoistic, unethical doctor will do more harm to the whole profession in a given community in the short space of a year than can be undone by the combined efforts of all the altruistically inclined doctors in the same community in ten. But while the profession of medicine has always been cursed with the egoistic doctor, yet has she always and at the same time been blessed with the altruistic doctor. The Hippocratic oath is bubbling over with altruistic meaning.

But doctors have always exhibited more of the true altruistic practice towards their patients and the community in which they practice than toward each other.

It is the egoism in the doctor which prompts him to say: "Well, I got here just in time. If I had been ten minutes later your child would have died."

The same with the doctor who when about to open an abscess above the ear admonishes the patient: "This is a very delicate and dangerous operation. I am about to cut here within the hairsbreadth of the large artery that runs from the head to the heart." The same egoistic tendencies come to the surface in the doctor who, called in your absence to attend your patient, immediately sets about installing himself into the good graces of the family, and upon your return you find you have no case. While this kind of action is referred to here as an outcrop of the egoistic in man, yet the judicial system of our country applies another name to it under somewhat similar circumstances.

The altruistic in medical men outcrops in many ways. We have but to survey the past and review the hundreds of discoveries made by patient, persistent workers, all for the benefit of the race. You will search history in vain for an exhibition of such unselfish-

ness in any other trade or profession. Does any one doubt the practice of true altruism in such men as Jenner, Pasteur, Lister, Koch, Klebs, Metschnikoff, Behring, Ehrlich, Donald Ross or Walter Reed? Where in all history will you find such unselfish work accomplished, the results of which can never be computed in the terms of dollars or pounds? And yet all freely dedicated to the cause of "the greatest good to the greatest number." The reorganization plan recently put in operation by the American Medical Association is an altruistic measure. From the inauguration of this movement great good should come, not only to individuals but to the profession both locally and generally.

Contemplated in its ultimate objects, if they could but be attained we could or would have practically a united profession. Individually in localities we would cease to think of our brother practitioner as practicing some exclusive system, but would in time think of him only as a physician whom we could trust and be pleased to meet both socially and professionally. With such a regime as this obtaining we would see the petty embitterments observed now so frequently among physicians pass away. If it were possible to attain the ends desired in the reorganization plan of the American Medical Association we could develop into a medicopolitical unit of such proportions as to work much needed reform along many lines, and all would be purely altruistic in their designs.

The individual doctor can exert quite an influence among his patrons if he so desires. This I think can be attested by all doctors who have dabbled in politics.

The influence of one doctor would be enhanced if all doctors in the same community were trying to work in harmony with each other for the same purpose.

In other words, if the laity were given the same arguments for or against any proposition by all doctors in a community it would have more influence than if they were at cross-purposes with each other upon the same subject.

The doctors of our State are responsible for all that is good and sufficient in our present medical laws, organized as imper-

fectly as we are and have been in the past. Many of us will remember how we labored with the legislators for the State Laboratory Bill, the bill for the epileptic colonization plan. These bills became laws. Does anyone think they would now be in existence if the doctors of the State of Indiana had not taken up the matter and labored with their respective representatives? Yet both these measures are purely altruistic. If we should approach within a reasonable degree the perfect organization aimed at in the reorganization plan, there is no limit to the possible things we could do in the way of legislation, both State and national. The practice of medicine would be defined by statute in every State.

The pure drug and food bill would find its way through the Congress of the United States. A compulsory vaccination law would be passed. The nostrum evil also would meet its Waterloo. Our health laws could be greatly improved. The matter is mostly in the hands of the several States, which has resulted in a set of good, bad and indifferent laws throughout the country. What we need most is a national head, a cabinet officer, with such legislation as would permit a harmonious system being evolved, which would be uniform in its working all over the United States.

Another thing has occurred to me many times that affects physicians practicing as we do in this locality where much of our business is in the country, and that is the good roads proposition. Under our present system, our money in taxes for road purposes is almost as good as thrown away. There is no head, system, no uniformity in treating the roads. There can be no question but after all these years of road building in these United States, there are not some methods better than others, and that some engineer somewhere has evolved the best methods known down to date. Yet how do the Commissioners of Delaware County know this?

If they did, the next set of commissioners would do something different. Even the road supervisors in contiguous road districts each has his special method of treating the roads. So out of all the muddle in the road question I can see but one perfect solution. First a national head, empowered with such national legislation

as would make a uniform system out of this road building. It is not my purpose to go into the details of just how this should be done; but it could be done. And when we had gained some knowledge from experience in road construction it would be preserved and we would be getting the benefit of such additional knowledge as might accrue from year to year. Under the present order of things it matters not if some engineer up in New York State has had charge of a large number of roads for thirty years, and in that time, from his experience, has mapped out a certain type of road construction as being the best and most economical in his judgment, the authorities in charge of the road question in Randolph County will continue in the same old rut year after year. No head, no system, no uniformity.

Probably you think I am straying from the text of altruism, as applied to medicine, but I feel that the good roads question is certainly altruistic in its scope. And with such organization as we might hope for, our power with the legislators might be felt in this movement.

The subjective feelings of the man who has grown wealthy yet has never given one penny to any worthy cause, must so far as the pleasure of those feelings are concerned be confined to the simple satisfaction of knowing that he has the dollars and is holding on to them. He is the analogue of the doctor who has so far given himself up to quackery and charlatan practice, so as to gain much wealth, but who must as he approaches the grave look backward over a misspent life and see no commendable action on his part played in the drama of life. No worthy act done, no worthy deed accomplished. He is the acme of egoism in the medical man. Contract this doctor, if you please, and his feelings as he approaches the evening of his day with the doctor who has spent his life in a faithful, honest service for his fellowman. Constantly all his years has he gone through heat and cold, sunshine and storm, day and night, on his mission to relieve suffering and prolong life. He has risked his life and jeopardized the lives of those near and dear to him many times in his efforts to cope with some dreadful epidemic and where if there was any remuneration at all

it was never adequate. He has been the chief charitable institution in his community. He has been present at the birth, he has soothed the pathway of the dying, hundreds of times in his career. His counsel and advice has been sought and given times without number when it relieved the distressed feelings of his patrons. Who will doubt that he has been the true altruist? Who could wish him other than the true euthanasia?

CHRONIC BRONCHITIS.

BY CHARLES R. SOWDER, M. D., OF INDIANAPOLIS.

It would not be possible in the time allotted to this paper to more than briefly discuss the various chronic ailments to which the bronchi are subject. Chronic bronchitis has been selected from this group as of special interest because of its relative frequency as well as the relation which it sustains to other chronic conditions. The peculiar structure of the bronchi together with their position in the animal economy make them especially prone to disease.

The bronchial tree having for its trunk the trachia, larynx, pharynx, nasal and buccal cavities, and for its leaves, so to speak, the delicate vesiculi, is often exposed throughout its ramifications to impure germ-laden air on the one hand and impure blood on the other, rendering it peculiarly susceptible to inflammatory conditions.

Chronic bronchitis or chronic inflammation of the bronchial mucous membrane has its beginning usually in repeated attacks of acute bronchitis or in neglected single attacks. The disease is characterized by a more or less constant cough and by an expectoration of varying amount. It may occur at any age and in both sexes but is usually a disease of adult life, and occurs more frequently in men than in women. The disease is purely a local one but may cause a constitutional disturbance.

ETIOLOGY.

In discussing the various causes of this condition, I should like to speak first of this disease in childhood. Here I think is where neglect of seemingly simple conditions and ones usually amendable to treatment result in obstinate chronic conditions.

In childhood the exenthemata are perhaps the greatest factor in

the production of chronic bronchitis. Measles, scarlet fever, whooping cough, with the bronchial catarrh, which usually accompanies them render the mucosa susceptible to infection. The weakened condition of the patient, the cough and susceptibility to cold are potent factors in the production of chronic inflammatory condition.

The frequency of acute catarrhal inflammations of the respiratory passages from causes other than the exenthemata and the liability to recurrences of these attacks on the slightest provocation, lead often to a chronic condition. Hoffman of Leipzig, has perhaps given us our best classification of chronic bronchitis on the basis of etiology, viz.:

1. The forms which follow acute bronchitis, including also the forms occurring after measles, whooping cough and la grippe.

2. Forms which depend on constitutional anomalies, gout, rachitis, scrofula and Bright's disease, including, also, certain forms observed in eczematous patients.

3. Forms which develop from chronic injurious influences. The bronchitis of inebriates, smokers and the forms occurring in those who work in dust (mechanical bronchitis).

4. The forms occurring in individuals who have some disease of the nose or nasopharynx, which make them breathe through their mouth and thus expose the air passages to injury.

5. Chronic bronchitis occurring in persons with circulatory disturbances; heart disease, obesity.

6. Chronic bronchitis in persons with any chronic disease of the lungs.

Generally speaking, any irritant coming in contact repeatedly with the bronchial membrane may result in chronic irritation which is not relieved by a cessation of the irritant. The rheumatic diathesis is a potent factor in the production of many cases, the rheumatic poison being as liable to affect the mucosa of the lungs as it is membranes in other parts of the body. The so-called tendency to "taking cold" is in reality the result of a disordered state of metabolism and defective elimination.

Chronic bronchitis occurring in alcoholics and in smokers is due

to the continued use of irritants which render the bronchial surface less resistant to disease. Cement workers, millers, sweepers, garment makers and those subject to the fumes from acids and ammonia, contract bronchitis as a result of a direct irritation of the mucous surface. Too little attention, I believe, is given to the nasal and nasopharyngeal cavities in their relation to bronchial disease. A mouth breather can hardly escape a bronchial irritation. Not alone is this true in a chronic obstruction, but is no less true in many cases where nasal breathing occurs with but little restriction but where the air must go over surface covered with altered secretions, and in not a few where pus is being constantly poured out into the air passage from accessory cavities. The etiology of a chronic bronchitis may be summed up in the statement— a denuded mucous surface plus an infection.

Panseiri finds in healthy bronchi eight different kinds of streptococci; several kinds of sarcinal, twenty-one kinds of bacilli and ten kinds of micrococci. When the protecting epithelium is broken, micro-organisms are present and produce infection and this injury to the epithelium always occurs in inflammatory conditions.

In persons presenting circulatory disturbances, chronic bronchitis occurs as a result of failing compensation. This is especially true in mitral disease where with a passive congestion of the lung we have a congested and swollen mucous surface with active and subsequent infection. This, if continued, produces a chronic bronchial disease. This may also occur in disturbed heart action. Similar conditions exist in chronic wasting diseases of any character. Another class of cases derive their injury from existing chronic disease of the lung tissue. This occurs in pneumonia, with delayed resolution, a cavity sometitmes being formed and a chronic irritation of the bronchi being produced by the secretions.

The pathology of chronic bronchitis is the pathology of acute bronchitis plus the changes resulting from chronic irritation.

In acute types we have first a hyperemia consisting in the injection of many small blood-vessels. Small hemorrhages may occur. An abundant serous transudation appears in nature, varying with the cause of the inflammation.

Hypertrophy of the mucous membrane occurs as a result of this transudation. The longer the catarrhal inflammation lasts the more persistent is the hypertrophy, the continued irritation resulting in a chronic condition. The glandular element plays an important part in the changes, the glands at first pouring out an opalescent fluid composed of mucin and desquamated epithelium. Many new blood-vessels appear. The ciliated epithelia are often cast off, and then the glands may be seen discharging their contents directly into the bronchi. At this stage the chronic changes may begin. Part of the surface cells may become goblet cells, pouring their contents on the free surface, others become mucous cells. The irritation may become still more severe and all the epithelial cells may be cast off. The uppermost layer will now consist of round cells, the surface assuming a smooth and shiny appearance due to the basement membrane being laid bare. The muscularis underlying the submucosa may become infiltrated and atrophy, giving rise to bronchiectasis. The cartilages are often attacked, ossification following. Frequently in older people the bronchi become perfectly rigid tubes.

In the smaller bronchi, peribronchitis is prone to develop. A true ulceration may be added to the catarrh, this ulceration developing from the mucous glands. It is questionable, however, whether this condition ever develops in true catarrh, this condition being more apt to occur in chronic irritation due to tuberculosis or syphilis.

The most constant symptoms of a chronic bronchitis are cough and expectoration. The history of the case is important to the diagnosis. The patient usually comes with a story of repeated colds followed by bronchial irritation, the attacks occurring chiefly in winter with an abatement of symptoms during the summer. The cough of chronic bronchitis varies according to the quantity and quality of the secretions expectorated. The cough in the form of bronchial irritation known as dry catarrh being the most aggravated, due to a viscid secretion difficult to expel. Where the secretions are abundant and much less viscid but little effort is required to expel them. The cough may be paroxysmal, the

patient on first awakening being able to clear the bronchi and suffering but little inconvenience during the remainder of the day. The sputum of chronic bronchitis has no special characteristics, varying as stated from a scanty viscid mucous to an abundant watery secretion with a small amount of pus on the one hand and an abundant purulent or even fetid expectoration on the other.

Physical examination is unsatisfactory Percussion is of but little value, the lungs giving usually a normal percussion note or, if any change, a slight hyperresonance. Auscultation loses part of its value as a rule because of the abundance and varieties of sound heard. Some cases where the disease is limited to the larger bronchi may give no symptoms by auscultation. The chief value of percussion and auscultation in chronic bronchitis is to exclude the presence of complications.

Microscopical examination of the sputum is of value, as we may determine to some extent the amount of destruction occurring in the bronchial tissue. The bacteriological findings aid chiefly in differential diagnosis, but to some extent may modify our treatment. The diseases with which we are most likely to confuse bronchitis are fibroid phthisis and chronic pleurisy with fibroid changes in the lungs. Phthisis being essentially a bacterial disease, the finding of the bacillus will make the diagnosis easy. Chronic bronchitis is a nonfebrile disease and is not characterized by the fever and wasting which accompanies phthisis. Attention has been called to the differences in contour of the chest. In phthisis the depressed chest, with elongation of the neck and the marked wasting of the neck muscles are contrasted to the rounded chest and well developed neck muscles of the bronchitic subject. The history and rapid course with the chills and exacerbation of fever of the former disease will usually render a diagnosis easy.

In chronic pleuritic adhesions with fibroid changes in the lungs, the history of the case is very different, beginning as it does with pleuritic pains and continuing frequently to repeat this symptom to the last.

The sounds throughout the lungs are so varied that a differential diagnosis based on physical examination alone is not to be trusted.

The complications of chronic bronchitis are chiefly those due to an extension of the disease. Emphysema occurs in a greater or less degree in most cases. Bronchiectasis occurs in many cases. Adenitis, nonsuppurative in perhaps nearly all cases. Catarrhal and lobar pneumonia from added infection and extension of the disease. Phthisis may supervene, as bronchitis furnishes a fertile field, only awaiting the sowing of the specific bacteria. Fatty degeneration of the heart with subsequent dilatation complicates many cases of long standing.

We should not forget the injury to the gastrointestinal tract, due not alone to the impairment of digestion by poorly oxygenated blood, but by the sputa swallowed. Many of the old cases develop a chronic atrophic gastritis which becomes the predominant affection. The writer saw two years ago a man of 86, who for forty-five years had suffered from chronic bronchitis. Years prior to his death he developed an atrophic gastritis, and death finally resulted from exhaustion.

In the aged a bronchopneumonia is very prone to develop on the slightest provocation and often proves the beneficent anesthetic of later life.

Asthma is not an infrequent complication, and I believe is particularly apt to develop in the chronic bronchitis of children.

The prognosis in chronic bronchitis is good as regards to life, but as to cure will be determined by age of patient, ability to take proper treatment and the stage to which the disease has progressed.

I believe that the greater per cent. can be relieved if taken in the earlier period of the disease and proper hygienic measures and treatment given.

In discussing the treatment of this disease I have chosen to eliminate those cases due to diseases of the heart and kidneys, as their treatment would properly belong to the therapy of these organs. The prophylactic treatment consists in the rational treatment of acute bronchitis, together with proper hygienic measures to prevent their recurrence. One attack invites another by weakening the mucosa. In children many cases have their beginning

in comparatively insignificant attacks of bronchial catarrh which both parent and doctor often deem of little consequence. Every child with even the mildest bronchitis should be kept under observation and treatment until every adventitious sound has disappeared. If such cases do not terminate in a chronic bronchitis they may terminate in a bronchial asthma, which I consider worse. Going still further, we should use such hygienic measures as will prevent the repeated taking of cold—a hardening process if you will permit the term. Plenty of pure air and a moderately heated home. The excessive heat of close dwellings, the air being too dry and extracting excessive moisture from the mucous surfaces, rendering them liable to injury by sudden changes of temperature, is a prolific source of disease in young as well as old. Patients may be rendered comparatively immune to colds by the use of cold water to the neck and shoulders daily.

In gouty patients, or in those with a so-called rheumatic diathesis, who catch cold, so to speak, at each atmospheric change, especial care should be exercised in the matter of clothing. Patients should be taught to dress for the weather and not for the season. For all cases with the bronchitic tendency a change of climate is always desirable, but may seldom be had. There is no doubt but that one or two years in a moderately dry climate out in the open constitutes the best treatment both prophylactic and actual. We meet many cases which on the first appearance of the chilling winds of autumn have a cough and expectoration which lasts them well into the following summer.

The treatment of bronchitis in general is largely a matter of the individual case. Each case should be studied carefully and individual traits noted. Upon our possession of some special fact may hang the key to successful treatment.

The writer would insist that in each case the sputum should be carefully examined and its bacteriological contents specially noted as well as the elements showing the destruction of tissue. The urine should be examined to determine whether or not there are causes either in the kidney itself or in retained products of metabolism or faulty metabolism. These facts having been obtained

and a careful history elicited and physical examination made, we are ready to intelligently treat our patient and direct his habits. In the majority of cases we have septic sputum, rich in staphylococci and streptococci. Our first endeavor should be to render the sputum sterile. To accomplish this we may use medication direct to the air passages in the form of inhalation. Normal salt solution with turpentine, creosote, carbolic acid, tr. benzin com., or tar may be used with advantage, being inhaled for several minutes at a time three or four times a day. No specially devised inhaler is necessary. Internally creosote, guaiacol carbonate and other remedies, chiefly the terebene series, that have especial action on the lung tissue are of value.

With this, however, we should never lose sight of the fact that pure air, because of its oxygen, is the best disinfectant. To this fact is due the results obtained from outdoor life.

We may accomplish much by the improvement of the blood, increasing its oxygen carrying properties. For this we have no better remedy than some form of iron. This is best administered for a long time and in the form of tr. ferric chlorid or in the form of Blaud's mass and arsenic. The many albuminate preparations on the market, while more palatable, are of uncertain composition and doubtful efficacy.

Codliver oil or petroleum emulsion with hypophosphites will prove useful adjuvants. In these forms, the catarrhesec of Laennee, expectorants may be needed to increase the secretions and render the sputum easy to remove. Potassi iodidi in small doses will aid greatly. Alkaline mineral waters may be taken, particularly those rich in sodium chlorid or sulphur. In these cases the inhalation of vapor from normal salt solution is of much benefit.

In children, in addition to outdoor life and hydrotherapeutic measures, I know of no better remedial agents than the emulsions with syr. ferri iodidi. These continued for a year or more. The persistent use of the iodidi of iron will prevent many cases of bronchial affection in children from developing emphysema or bronchial asthma, or both, if persisted in.

For the cases having a profuse purulent expectoration, in addi-

tion to building up the system we should have the bronchial surface as free from the secretions at all times as is possible. Before arising the patient should drink some hot drink, a cup of hot milk, flaxseed tea or other demulcent. These will aid in clearing the bronchi of the night's accumulation. If the stomach is covered with mucous we should wash it out. The same is true of the bladder, in fact any mucous surface favoring us with accessibility. The retention of mucous tends to prolong and increase the disease.

One thing which we should always remember concerning mucous surfaces is that their chief business is to secrete a slightly alkaline fluid; only sufficient mucous is secreted to permit this fluid to diffuse readily and to prevent its rapid evaporation. Any departure from this, either the one way or the other, is a pathological condition.

In many chronic cases then an increase of the watery secretions does good in that it washes the surfaces free of sputa.

In this connection I want to speak especially of the value of one drug, viz., the sulphoammonium icthyolate. This has been a most efficient aid to me in these cases. Under its continued administration the expectoration usually changes rapidly to a more normal secretion, often losing in a few weeks its purulent character. I do not know to what this is due, but presumably to its sulphur, promoting oxidation. I usually combine it with the balsams, especially balsam of fir. There are but few stomachs which will not tolerate it in doses of five to twenty minims three times a day.

In old people we do not expect curative results from any treatment, but I believe if in young and middle life the cases are carefully studied and intelligently and persistently treated the great majority of them will get well.

We also need to look after the heart if any cases are of long standing or if asthma or emphysema have supervened. Often putting the patient to bed for a month will pave the way to recovery.

The cough should be controlled. Heroin or codein may be used. Patients should understand that every detail of treatment must be followed, and that it is a matter of months if not one or two years at best.

DISCUSSION.

Dr. G. W. Spohn, of Elkhart: This is too important a subject to pass over without discussion. It is something that every physician comes in contact with all the time. Just a word about the cause. The doctor referred to the effect of mouth breathing. There is not a doubt that mouth breathing is the cause of a very large number of cases of chronic bronchitis, and I regret that the essayist did not touch more upon it. I believe if we can remove the cause in any of these cases of chronic bronchitis you can cure them. I do not believe there is any need of treating them a year or two years to cure them. In the first place we have the natural secretion of from one to one and a half pints from the nasal passages, and a large number of these cases, unless from the heart or kidneys, are due to mouth breathing. Perhaps they are able to breathe through the nose during the day, but at night they are compelled to breathe through the mouth. When they do that the air is taken directly into the pharynx and larynx and the air vesicles in a dry condition, not saturated with moisture. We have only one layer of epithelium in the air vesicles, and the result is we get a dried-up condition and there is no natural exchange of oxygen to the lungs and carbonic acid to the air. We get then that contraction of the tubes of which the essayist spoke, and there is a constant irritation, of which mouth breathing is the cause. Remove the cause, give them proper nasal breathing and warm and moisten the air before it goes to the lung. As to the medicinal treatment, I do not believe there is any use of using opiates in a large number of cases. I believe if the cough can be stopped the bronchitis will be stopped and I do not believe there is any need of any medicines. But all the essayist said about the guaiacol preparations and tonics I approve. Build the system up, but to relieve the cause of it we will teach them to breathe properly. That is all that is necessary in a large number of cases. I contend it is unnecessary to cough, at least it can be reduced in any case, whether in tuberculosis or other trouble. The trouble is they try to stop the cough with the lungs emptied. Now they should try to stop the cough with the lungs inflated, letting the air

out slowly; breathe again through the nose, hold it as long as possible, and repeat this five or six times. What is the result? The cough center which has been irritated on account of the dry mucous membranes is appeased and there is no cough. Now that can be accomplished by breathing five or six times or more as I have stated, and nature throws out mucous upon the dry surface and the cough will be controlled. I have experimented with a great many cases, and even whooping cough in children four or five years old can be controlled to a great extent, and in chronic bronchitis it is easy to control it unless due to these other causes.

Dr. L. C. Cline, of Indianapolis: I wish to call attention to one particular point spoken of in the paper, and that is the rheumatic or lithemic condition we find in these cases. It has been my observation in looking after the upper air passages for fifteen years that there are a great many cases of bronchial irritation due to faulty metabolism resulting in a lithemic condition. It has been my experience that if we will turn our attention to that particular thing and administer remedies to eliminate this condition we will benefit our patients materially, and in doing this we relieve the condition the gentleman spoke of. We have in these conditions the foundation of the stenosis, the hyperemic and hypertrophic conditions of the nose for which we so often are compelled to operate.

Dr. Chas. R. Sowder, closing: One or two points I would like to speak more about, and one of these is the early bronchial irritation of children. Many of us have children brought to us and their mothers will not be satisfied that their children will outgrow certain conditions like rattling in the lungs, that result in chronic conditions and impairment of the health generally. The other is mouth breathing. I am glad that has been mentioned. I do not believe we ought to neglect for a day or a week the removal of tonsils and adenoids whenever they begin to oppose the movement of air through the nasal passages. In many cases if you will remove nasal irritation and prevent the continued falling down of poisonous material from the diseased nose chronic bronch-

ial irritation will never exist. In the statement Dr. Cline has just made about the lithemic condition, I did not speak very much about it on account of the necessary brevity of the paper. But we should not treat any of these cases without strict attention to the diet and excretion. I do not use opium and codeine except in a few cases, and only to secure rest.

INSTITUTIONAL TREATMENT OF NONSURGICAL CHRONIC DISEASE.

BY JOHN LITTLE MORRIS, M. D., OF COLUMBUS.

The young medical man of today, surrounded as he is with the products of the advance which our profession has made during the last two decades, can not properly appreciate the conditions which confronted the practitioner of forty or even twenty years ago. The advance which surgery has made during the past twenty years far exceeds that made during the entire previous history of medicine. Twenty years ago, when a general practitioner was confronted with a case which necessitated a major operation, this class of work could be done only by one of the eminent surgeons in the large medical centers; at this time, with the knowledge we have of asepsis, antisepsis, histology, bacteriology and pathology, combined with improved technique both as regards the operation and care of the patient, laparotomy, cholecystenterotomy, nephrotomy and brain surgery are done in any of the smaller cities, or even in the average home, with satisfactory results.

When we properly appreciate this magnificent advance surgery has made we are, I believe, justified in anticipating even greater results for the future; but while we are with this degree of satisfaction viewing the present and future status of surgery, if we will but for a moment glance at what has been accomplished along the line of the nonsurgical treatment of chronic disease, we shall be obliged to admit that outside of those few cases wherein drugs are indicated, the general advance in our profession during the past twenty years had been decidedly one-sided—in favor of the surgical as compared with the nonsurgical treatment of disease. True, great strides have been made along the lines of preventive medicine, and it is with gratification that we view the results already attained towards the elimination of many of the infective dis-

eases, such as yellow fever, cholera, bubonic plague and malaria; and might it not be true, that as our investigators enter more deeply into this interesting field, the product of the results they attain may eventually tend towards lessening the great number of chronic diseases we now have with us? We certainly have some foundation on which to base our hope that this will prove to be the case.

There are many factors, no doubt, which are responsible for this inequality in the advance of the two main branches of our profession. Doubtless the foremost one that deserves mention is the influence exerted by the great number of charity hospitals and clinics which abound in all the larger cities. Thus being within the reach of all, patients may go there, receive the services of the foremost men in our profession, operating in a perfectly equipped modern hospital, with possibly only a nominal expense to themselves—sufficient to defray the expense incident to board and room; and although we appreciate that this condition of affairs has done much to advance the cause of surgery, it certainly does seem to be an injustice, especially to those of us who do not come under the head of "the foremost men in our profession." So we stop long enough to inquire how such a condition can prevail without utterly demoralizing the medical profession, and also how it is possible for these busy surgeons to give this valuable amount of their time for what we might term charity cases. One reason why this may be possible is that a skillful surgeon, by operating for a few hours daily, may do the work necessary to insure the success of the institution, and yet, leaving the details largely to assistants or house staff, have the remainder of the day to devote to his private practice. This would not be possible in those cases requiring nonsurgical treatment in these institutions, for (with the possible exception of those few cases wherein drugs are indicated—and with all due respect for drugs we must admit that they are of little or no use as a curative measure in the great majority of chronic cases), the amount of time necessary to administer treatments would preclude the possibility of the leading men in this line doing more than possibly to outline the treatment indicated to

assistants or nurse, and then rely on them for the fulfillment of detail.

Another reason why in these institutions the nonsurgical treatment of disease is secondary to surgery is the fact that there is more glamour and fascination attending a difficult surgical operation by a brilliant operator, both for on-looker and operator, than is incident to the administration of any of the forms of physical treatment in nonsurgical work, even though it be done by one of the leaders in this line of work. Frequently, especially in the large medical centers where these institutions abound, possibly one of the most eminent teachers or operators can be seen for an hour or two each day in a one or two-room office, equipped with little besides a few bottles of drugs, an examination table, a few instruments for examination purposes, desk and chairs, prescribing and giving advice to his pay patients of the better class, who have every right to demand his best effort and ability, and then devoting the remainder of the day ministering to charity patients in a perfectly equipped hospital. As a consequence of such conditions prevailing in these institutions, the house staff and internes lose interest in the nonsurgical work, and go through their service with a fixed determination when they enter private practice to devote themselves to surgery, which has more fascination for them than the nonsurgical field. Accordingly, as this class is more commonly met with in private practice than are those purely surgical, these physicians either have to fall back on drugs or allow a large share of their clientage to drift from their hands, usually into the hands of the irregular practitioners; and one of the most discouraging experiences that the young practitioner of medicine has to face is when one of his patients falls into the hands of the quack. It is the recent graduate in the community to whom the confirmed chronics apply, and when he meets these cases and begins to appreciate his inability to handle them successfully, we can not blame him if he feels that at least some of his time in college and hospital has been misapplied.

It is only within the past few years that the medical colleges and hospitals have awakened to the fact that they have in the past

devoted too much time to physical and other means for the cure of those diseases which do not respond to drugs. If the young graduate entering on general practice starts out fully equipped in these measures sufficient to reach at least some of these cases, he will be able much sooner to get the confidence of the community than he would be without it.

If the surgical hospital of today adds to the welfare of our surgical cases, surely properly equipped institutions for nonsurgical work would be equally useful and desirable, for there can be no doubt that there is as great a necessity for well equipped work in battling with these cases as those purely surgical. Physical and natural means are rapidly coming to the front in the treatment of disease not amenable to medicine, and it is to these we must look if we hope to advance very materially in the treatment of these cases. Special institutions completely equipped and manned each to its own line of work, must come, if we attain this desired end, and the value of such institutions should in time be appreciated alike by physician and laity to the degree which is accorded the surgical hospital of today.

The value of institutional work in nonsurgical disease lies in the possibility of the trained specialist giving closer attention to detail at a minimum of time, the successful outcome of many of these cases depending on faithfulness to detail. Such faithfulness beginning with the preliminary examination, carried through the outlining of the treatment and the laying down of definite orders to be rigorously followed, after a careful study of the individual, all with due consideration for the psychic effect, exerts considerable influence as to the future outcome of the case.

Furthermore, with the main element of treatment in institutional work should be associated other remedial agents of great service in this class of cases. Such an institution should supply diet, rest, exercise and the physical measures, hydrotherapy, electrotherapy, thermotherapy, massage and mechanical vibration, and combined with all or any of these, the very essential mental medicines, discipline, expectancy and environment. Last, but not by any means the least that should be mentioned as very essential for

successful institutional work in these cases, are proper facilities for thorough and exhaustive examination, including blood, urine, stomach and excreta analyses, not only upon admission, but also at frequent stated intervals, as a means for definite scientific deductions as to the effects of the treatment instituted.

The physical and natural means necessary to equip such an institution are of such magnitude and expense as to deter the general practitioner from entering this field, hence this line of work properly falls into the hands of men who have special training for it.

We have numerous so-called sanitariums profusely sprinkled over the country, many of whom cater exclusively to pleasure-seekers, or ask for patronage on the merits of their adjacent scenery and the ultra-fashionable society to be met there. As they do not cater to the genuinely sick, they have no hard or fast rules laid down for their patrons, it being entirely optional with them whether they take any treatment or not, so long as they satisfy the cashier. The principal relaxation at this class of institutions consists in dancing, card parties and gossip, and it is the testimony frequently given by people who, seeking rest and treatment, have entered one of these institutions under a misapprehension, that they wore themselves out dressing for meals, receptions and the veranda. The management usually being invested in a money-making corporation, if they possess a medical staff it is made up of men who are interested in the financial welfare of the institution, possibly some retired general practitioner, seeking a life of ease, but at any rate men who having no preparation for this field are unfitted for this line of work.

Another type of institution that is rather common would be classed under the head of empirical therapeutists, insomuch as they rely exclusively on one or at most two of the physical measures to meet all classes of chronic disease, one relying on hydrotherapy, another on electrotherapy or diet. It would be as rational for the physician who relies on drugs to limit his armentarium to one or two drugs, as it is for this class of institutions to claim to treat successfully all forms of chronic disease with one or two of the popular physical measures.

Nearly all the popular institutions in our own State come under one of these heads. Not catering to the genuinely sick, if a patron does become at all seriously ill while there, the management makes every endeavor to have him return home as soon as possible, it being a great inconvenience to have a death occur among the patrons. Patients are received without any premilinary examination, are not advised as to treatment, diet, exercise or rest, and so long as they pay their bills promptly are under no restrictions whatever. Desiring the services of a physician, they are directed to the one employed by the management, usually on a percentage basis, or they drift into the hands of the one they find most convenient, in either case men whose orders as outlined to the patient will be carried out only in so far as they do not interfere with the regular routine of the institution. I have known of cases of rheumatism, tabes and diabetes receiving exactly the same treatment in one of the popular institutions of our State, which treatment, although possibly indicated in one of these conditions, would certainly be contraindicated in the others.

These institutions advertise extensively through the medical and lay press, and doubtless get a goodly share of their patronage through these sources; but aside from all this are we not as physicians largely responsible for the popularity of these institutions? In cases where we rely on prescriptions and advice, trusting that each prescription will meet the requirements, do we not postpone from day to day advising a change in environment or treatment which we can not supply, until the patient becomes discouraged, and possibly acting on the advice of a laity friend enters one of these so-called sanitariums? I believe that only too frequently this does occur, and when patients enter these institutions under these circumstances, having no knowledge either of their ethical standing or ability to handle their case successfully, and, as it only too frequently happens, when they do not receive the benefits they hoped for, they are exceedingly prone to censure us as physicians for our indecision, which was the direct cause of their entering an institution where the proper conditions did not prevail necessary for their recovery. Further than this, when they return home, they are apt to give voice to their sentiments, and

usually get into the hands of another physician who is ever standing ready to sympathize for the customary fee.

When we realize that in certain cases we are at the end of our resources, we should not feel any hesitancy in advising and directing our patients where the indicated treatment is to be found. It has been my experience in institutional work that the physician who to the greatest degree commands the respect of the community in which he practices, is he who, when he realizes that a patient requires special treatment or environment which he does not have access to, cheerfully directs him to a specialist or institution where he knows the proper treatment is to be had, and as a matter of fact these patients give their physician who under these circumstances gave such advice, the credit for the benefits received, rather than to the direct source from which they were derived. We are not true to our profession, much less to our patients, when we rely solely on prescriptions and advice, when oftentimes it is purely and simply a question of the environment of the individual being at fault. Such modification or environment necessitates change in surroundings, mode of life and responsibilities which can best be secured by such adequate means and appliances as should be found in every institution properly equipped for this line of work.

Institutions for the nonsurgical treatment of chronic disease, under the control of well-qualified ethical men, properly equipped with the necessary physical and natural means, where each case is treated as an individual and not as one of a class, should be a welcome adjunct to the resources and equipment of every practitioner of medicine; and if the general practitioner and family physician will learn to differentiate between institutions of this class and those which cater for popularity, regardless of all else so that they draw the people, and will be prepared to adjust his prescription according to the need of the patient, and, when convinced that the resources at his command will be ineffectual, will not delay directing his patients where proper treatment will be found, the result of this attitude of our profession will be that in the very near future reputable institutions will be within easy

reach, whither we may direct our nonsurgical cases with an assurance that not only will our patients receive all the benefits of modern therapeutics, scientifically administered, but at the same time our interest as family physician or specialist will be conserved, we shall at once enter into the greatest and most effectual campaign ever started to lessen the golden stream which now flows so plentifully into the pockets of the quack and irregular, who find their most fertile field in those cases which do not respond to drugs; and as physicians we shall inspire greater confidence in our patients, thus drawing patient and physician closer together, bound with the bonds of confidence and gratitude, reacting against the irregular institutions and discrediting them in the eyes of the laity as a cure-all; but greater than all these desirable attainments will be the tendency we shall exert toward advancing the treatment of nonsurgical disease to the mark now set by surgery.

DISCUSSION.

Dr. T. A. Borton, of Plymouth: I do not know that I can add to that paper. It certainly covers a large field. Dr. Morris has neglected nothing, I think, but as I have been a long time in the practice I am inclined to give something of an idea of the changes that have occurred since I commenced active practice over 49 years ago. I commenced when the main treatment was to take away the vitality of the patient, by cupping, by blistering and by the lance. At that time we had nothing to sterilize with, we had no quinine, and children were permitted to run in and out where we had cases of diphtheria and scarlatina and other infectious diseases.

In thinking back over my experience I believe that every system of medicine has been founded upon our mistakes, as in the excess of calomel and the excess in blistering and bloodletting, where those things should not have been used at all. They had no use for pharmacy, using the drugs in the crude state, but I guess they did some good sometimes. I believe they did.

Then when we were called to treat the exanthemata, scarlet fever and that class of cases, little children were put to bed, cov-

ered up and permitted to have no cold water to drink. I believe upon that very mistake hydropathy became founded, and they started to use cold water for all diseases. Our system of using the crude drugs, which was very objectionable, was the cause of another system springing up, and I believe that taught us another lesson that we have benefited by. But I believe we still made mistakes. We paid no attention to massage, manipulation and mental pathology upon which so much of our success depends, and so we have osteopathy and Christian science and the faith cure. This is simply the result of our mistakes. And yet, gentlemen, the old practice is the foundation of all practice. In regard to surgery and in regard to places of resort, I certainly think these things ought to be distinguished. If people want to go to places to dance and play cards let them go where such things are provided. If they are sick let them go to hospitals and institutions where they have a corps of competent physicians and each individual be treated according to his needs after a close, careful examination.

Dr. A. M. Cole, of Indianapolis: I think Dr. Morris has given us a very timely paper. I believe you will all agree that brilliant surgery has blinded us to the proper care of this great host of non-surgical, chronic patients, and I think the points the doctor brought out as to affording the means to treat these cases could be used by a great many doctors who at the present time rely upon drugs alone. I believe the day is passing when the doctor will rely upon drugs alone. It has been a stigma rather on the profession that our advance in therapeutics has not kept pace with the advance in other lines. We can diagnose cases and find the cause of diseases and we can run down the minute pathological changes that have occurred, but when it comes to treating these conditions we fall down. Outside of drugs nine doctors out of ten are helpless when it comes to treating these chronic cases. They give a little advice about diet, or where a patient can afford it they advise a change, but they know little about electricity, hot air, mechanical vibration and massage. And queerly enough, as the doctor has said, we have no institutions where we can send our patients. In my home town of two hundred and fifty thousand I do not know

of one ethical institution where all these treatments can be carried out. Dr. Sterne has a very fine institution and has most of these methods, but it is so full that we can not get patients in there. And most patients can not afford the prices which seem to be necessary at institutions of that kind. We need institutions for the great host of our patients who are not able to pay the prices that are attached to these private institutions, the same as we have our city hospitals to supply the surgical needs of our charity patients. We are every day supplying patients to the quacks because we have no institutions of this kind, or because the individual physician is not equipped to do this sort of work. Recently there has come out a work edited by Dr. Cohen, of Philadelphia, I believe, called a System of Physiological Therapeutics, and I think the work ought to be in the hands of every physician, because it gives prominence to the treatment of chronic diseases by such means as I have stated. I believe we are now entering upon a better era. It is a good sign of the times that some schools have recently given prominence to this sort of work and have established chairs to teach the use of electricity, heat, climate, diet, hot air, vibration and treatment of that sort. I repeat that Dr. Morris's paper is very timely, and I regret that more members of this Association have not been here to hear it.

Dr. W. E. Kessinger, of Sanborn: The question arises in my mind when listening to this paper, what is to become of the general practitioner if we proceed along the line of the essayist? There is just as good reason, I will admit, for carrying into execution the ideas advocated as for surgical treatment, but the question arises, What will become of the general practitioner? He will be permitted only to advise his patients to go here and there over the country to the various institutions for chronic nonsurgical cases as well as for surgical cases. It is a biological law that a species will revert to their original type if left to themselves alone. As Darwin says, we can take a pigeon and take him off to an island and leave him there, and go back in a decade and he will be a common old blue pigeon. He will no longer have all his beautiful markings. And so it will be with the ordinary practitioner of medicine if we proceed along these lines.

Dr. C. E. Caylor, of Pennville: As a general practitioner I just want to answer that question. The thing necessary for the general practitioner to do is to advance. This is just as good a time for the general practitioner as any time in the past. The thing for him to do is for him to post up and treat his chronic cases and do surgery, if he can. Keep abreast of the procession and he will not fall behind.

Dr. John Little Morris, of Columbus: The main stimulus for writing this paper was the realization, founded on my experience in institutional work, that a large majority of the cases that get into these institutions do not arrive there through the instrumentality of the family physician, and after they arrive there discredit their family physician for his delay in sending them to the institution, and there can be no doubt but some of these patients have just cause for complaint. It seems to me that there should be an understanding between patient and physician to the effect that when the resources at the command of the physician prove ineffectual, it would not alone be to the interests of the patient, but as well to the physician to direct his patient where the proper and indicated treatment is to be had.

As to what will become of the general practitioner, that has been very ably answered. He will become more of a specialist. As to the first discussion, I only referred to an institution that would be perfection in this line. I think the general practioner and family physician neglect this field and are not keeping up with the times. There are many of the physical and natural means that they have access to and should use, and many of these cases could be reached outside of such institutions. But there are certain cases, wherein, owing to the necessity for change in environment and a need for different surroundings, that will have to be referred to institutions. But these are not the great mass of patients. In the great mass of chronic patients you general practitioners will have to admit medicine is only palliative, and that although the measures used in these institutions are not always curative, they reach many cases that can not be reached by medicine.

Dr. A. E. Sterne, of Indianapolis: I can not allow the statement just made to go unchallenged. I have had the good fortune to go about this State and others, and I see a large number of cases coming to institutions, and I must say things are very materially improving everywhere. I believe the number of cases necessary to be sent to institutions is growing less and less. We do not want the general practitioners to become specialists at all. They are becoming entirely too much so. They are losing the grand old position they used to have. Medicine has made just as great advances as surgery. Mere manipulation with the knife is the least of the advantages of surgery. How many surgeons make their own diagnoses? They only manipulate the knife. It is the physicians who make the diagnosis in seven out of ten cases, and the greatest number who do the greatest amount of surgery almost never make a diganosis at all, but have the diagnosis outlined for them and only do the work. All around the State the general practitioner is growing into a better knowledge of pathology and neurology and psychiatry. We are using entirely too much medicine in this country, and while we are neglecting to a great extent mechanical measures, I do know it is not the fault of the profession, but the mass of the people. They want to put something into their stomachs, either fried potatoes or some other drug. And thereby hangs our difficulty. If we do not do something for these people they go to some one who will give them something, and nine out of ten cases of chronic diseases that come into our care, whether in general or special practice—and no specialist should be anything but a general practitioner—are largely neurasthenic and have no organic disease at all, or not in the sense that we speak of as organic disease. I felt that I must come to the assistance of the general practitioner, because after all the success of medicine depends upon him.

Dr. John Little Morris, of Columbus: Mr. President, I demand the right to reply to that. As Dr. Sterne did not hear the paper and only heard part of the discussion I feel that I ought to correct a little misapprehension that he is laboring under, especially as he disputed the substance of the entire paper. It was

rather in a joking way that I said the general practitioner would have to become a specialist. All I meant to infer was that the general practitioner, so defined now, should adopt more of the measures outside of drugs that could be properly found in an institution, but would be of equal use to the general practitioner. Dr. Sterne gave it as his experience over the country that the general practitioner is improving in this respect in the class of patients that he commands. I hope that is so. But if a man has sufficient means to pay $50 or $100 a week, the class of patients Dr. Sterne caters to, he may have any kind of treatment he requires. However, this class of patients is rarely met in the practice of the average general practitioner. So Dr. Sterne's remarks do not apply to the class that this paper deals with.

ABDOMINAL PAIN.

BY EDGAR COX, M. D., OF KOKOMO.

My excuse for presenting this subject is to call your attention to the great importance of pain in the abdomen. This subject is so extensive that I will only be able to touch upon some of the diseases in the abdomen. It is a subject that is sadly neglected by the average general practitioner and I regret to say even by some who are considered above the general practitioner. It falls to the lot of the general practitioner to treat a large per cent. of these cases at the very onset of the disease, long before the surgeon is ever thought of. It is here that I wish to make strong emphasis. It is here that the general practitioner should ever be on the alert for the danger signals that are hung up for his guidance. It is here that he should be able to correctly read their message of warning of approaching danger. It is at this opportune moment that the general practitioner shows his worth in making a correct diagnosis, at his first visit if at all possible, for we all realize that there are cases so obscure that it is utterly impossible to make a diagnosis at the first visit, and by recommending the proper surgical relief, will be instrumental in saving many valuable lives to the State and Nation that would otherwise be lost. How infinitely better it would be to make a correct diagnosis of an appendicitis early, and operate, than it is to wait until you have a large pocket of pus in the abdomen, then call your surgeon to operate. The mortality in the first class of cases is practically nil, while those of the second class of cases is twenty per cent. In my mind it appears almost criminal for a physician to select the second course.

I believe that the day is not far distant when the pus cases will be seldom heard of so far as it lies within the power of the physician.

Pain in the abdomen is the most common sympton, no matter

what the disease may be or where the pathological leison may be situated. Surgically speaking, the abdomen is the largest and most important part of the human body. Abdominal pain may be either acute or chronic. It may be due to colic inflammation, to trauma or to disease. It may be pricking, stabbing, cutting, lancinating, burning, tearing or aching. To correctly interpret the meaning of these varieties of pain it is necessary to know the history of the patient. It is essential to know whether the patient has ever experienced a similar pain before. If it is recurrent and the length of time elapsing where there is absolute freedom from pain. If the pain is recurrent, it is very likely to be due to the repeated action of the same cause, such as gastric or duodenal ulceration, to appendicitis, biliary or renal calculi rather than ruptured extrauterine pregnancy, strangulated hernia, pleuritis or pneumonia. If the pain follows the ingestion of food with much regularity we should suspect gastritis or ulceration of the upper intestinal tract.

Abdominal pain may be due to some peritoneal adhesion caused by some former illness. It may be due to an ovarian cyst twisted upon its pedicle. It may be due to a ruptured extrauterine pregnancy, to a ruptured bladder, to a ruptured spleen or a wandering kidney. It may be due to cancerous growths of the various organs situated within the abdomen.

Age, sex and occupation are of great importance in the diagnosing of abdominal pain. In the female sex the great preponderance of the pelvic organs over the intestinal tract should not be overlooked. In children we must not forget the importance of gastroenteritis, enterocolitis, or the simple entralgia. We should not lose sight of the possibility of appendicitis, intussuseption, Pott's disease and pneumonia as frequent causes of abdominal pain in children.

The location of the pain is of great importance. The pain may be deep or superficial. Sometimes the pain is referred to widely distant parts of the body, as pain in the right shoulder-blade is indicative of hepatic trouble. Pain in the heels may be due to disease of the ovaries. Pain in the stomach and in the region of

the stomach is often a referred pain from the appendix. Also pain in the thighs is often a referred pain from diseased ovaries or some rectal ailment. Pain commencing in the kidney is apt to run down the ureter into the corresponding testacle. Pain due to certain forms of bladder diseases may be felt in end of the penis. Pain due to retained flatus or constipation may be experienced anywhere along the line of the colon or be brought to an abrupt ending at the iliocecal valve in close proximity of a healthy appendix. A sagging loop of intestine or the omentum, by pressure upon the internal abdominal ring may simulate chronic appendicitis. A floating kidney or wandering spleen may reach almost any part of the abdomen and simulate an ovarian cyst with a twisted pedicle.

In pneumonia or pleurisy we may have referred pain in the upper abdomen, but the presence of a cough, rapid breathing out of proportion to the pulse, high temperature, and cyanosis should satisfy us as to the nature of the thoracic disease. Perforated typhoid or gastrointestinal ulcer is capable of simulating chest disease from dyspnea and cyanosis. Peritoneal friction consequent on perforated gastric ulcer has been mistaken for pleurisy. I saw a case of uremia in a physician who complained bitterly of pain over McBurney's point just before a violent convulsion was ushered in. I operated a case of appendicitis a few years ago in a boy of thirteen, removing a small fecal concretion the size of a small olive. The iliohypogastric nerve is distributed over the pubes and internal abdominal ring but also sends a twig to the tunica vaginalis, which explains the cause of the pain in the right testicle.

In appendicitis as a rule the pain is at first somewhat diffused around the umbilical region, and only when the peritoneum becomes involved does the pain become localized in the right iliac fossa to again become diffused in proportion as the peritoneum is involved. We sometimes find the pain located in the left side in appendicitis.

Another cause of abdominal pain, and one which is far more frequent than it was generally supposed, is extrauterine pregnancy. Married women who have irregular or scanty menstruation, who

have been previously regular, and when seized with a sharp violent pain in either side of the abdomen low down, with nausea and perhaps severe vomiting, with a pinched and pallid face, rapid and feeble heart action, we would at once think of a ruptured extrauterine pregnancy. If the tube has ruptured and the blood is pouring out into the peritoneal cavity with failure to clot rapidly, death will soon ensue unless prompt surgical interference can be had. I was called to a neighboring village in consultation and found an abdomen filled with clotted blood extending up to the umbilicus. The abdomen was hard and the woman had been having pain more or less for nearly three months, with fever, rapid pulse and at times some nausea. She was passing small clots of blood per os at intervals during this period. The abdomen was opened and the blood clots removed. The patient made a good recovery. I mention this case because of the length of time elapsing after the rupture of the tube before she was operated.

Pain from gall-stone colic is said to be equaled only by labor pains. Dyspeptic symptoms, eructation, anorexia, nausea and vomiting belong to the usual history of gall-stones. Jaundice is by no means always present. In fact, scarcely half of the cases show jaundice. The persistent cases of jaundice with deep mahogany discoloration, with marasmus, with nervous signs later, are more apt to indicate carcinoma rather than gall-stones. A cause of abdominal pain which is rare, yet which must not be lost sight of, is embolism of the mesenteric vessels. This produces pain, vomiting and constipation so closely simulating intestinal obstruction and peritonitis as to render it impossible to determine the exact condition.

We can not always make a correct diagnosis, and we will not have done our full duty until we have traced every avenue—and sometimes in a vain hope—to discover the real cause of the pain. I have seen so much indifference and carelessness upon the part of the physician to procrastinate, that human lives have been sacrificed, waiting, waiting, in the hope that something might turn up tomorrow that would clear up the case or that the patient would be better. Too often the small blaze is watched until it develops

into a mighty conflagration and has passed beyond the power of human aid.

"If at times the opportune moment is lost, if the correct diagnosis is missed, what inexpressible sadness must fill the surgeon's heart as he is compelled to stand idly by, watching the lone sufferer sink beneath the pestilential blast of peritoneal inflammation. How keen then must be his self-reproaches when he realizes that timely operation would have saved the life which is now slowly ebbing away before his eyes and would have restored to the happy family circle a loved husband or wife, an idolized daughter or an only son. Vain then are his regrets. Vain are his efforts to slow the fevered pulse, to check the constant vomiting, to quiet the anxiety of mind and the unequaled distress of body attendant upon fatal peritonitis. The violence of the symptoms at times, indeed, may be soothed in the happy slumber of an opium trance which lasts until the wan sufferer has reached the land from whose bourne no traveler returns."

DISCUSSION.

Dr. M. F. Porter, of Ft. Wayne: This paper ought not to go without discussion. It seems to me that such a paper as this, and the ones which have been read before medical societies for the last number of years, ought to teach people that the condition of cholelithiasis is an exceedingly dangerous one if it is allowed to go on unmolested, no matter even if after this delay the patient gets into the hands of the best surgeon, and that on the other hand the condition is a comparatively trivial one in the earlier course of the trouble if it is given the proper treatment, which consists of course in removing the gall-stones and the infection. Some years ago I first read a paper in which I incorporated my experience along this line. We had been taught that the principal danger to be feared following an operation upon a case of cholelithiasis of long standing, especially common duct obstruction, was the case of hemorrhage. It happens that it has been my misfortune to lose seven cases of cholelithiasis following the operation, in not one of which there developed a single hemorrhage, but in all of

which there was a positive and microscopic examination of nephritis. The patients died of acute nephritis, which was proved by an examination of the kidneys after death, and more than that, it was still emphasized by the picture all of the cases presented before they died. I concluded that one of the principal dangers that we need fear in these chronic cases of common duct obstruction was kidney involvement.

Now we have had these papers on the subject of cholelithiasis and fat necrosis, and so, without going into the minute details regarding the practical ways that the infection produces these various lesions, I think without going into the detail we can say that the danger of cholelithiasis rests on a tripod, and in a majority of cases of long standing all of these three are present. This disease should be regarded as serious enough to have an early operation, and then the patient may get well.

Dr. T. B. Eastman, of Indianapolis: I may perhaps digress. It seems to me that there is another thing to be learned from this paper in so far as it discusses the condition of cholelithiasis, and that is this: Going around this State, and other States, for that matter, there is a large number of patients who are being treated for stomach trouble, they are being dosed with whatever they get for stomach trouble, I confess I don't know what, and they go from one doctor to another and he changes the treatment, washes out their stomachs and gives them a test breakfast, and all that sort of stuff, when as a matter of fact the cause of the trouble lies within the gall-bladder or the pancreatics or the duodenum. I have found that about fifty per cent. of the dyspepsia and stomach trouble generally is due to some of these things. My experience and the experience of all of the other operators at this time is that in the vast majority of these cases some sort of operation is generally necessary to effect a cure, and I think the general practitioner will do a great deal of credit to himself if he will take this kind of cases and either prove or disprove the existence of some disease, and if there is one exists have them operated on.

Chairman Clark: If there is no further discussion on this subject we will call on Dr. Noble to close it.

Dr. T. B. Noble, of Indianapolis: There is so much has not been said that I hardly know where to begin or where to leave off on this matter. I should first like to report some cases a little bit further. There must be something misunderstood, or misinterpreted or overlooked in the subject of cholelithiasis pure and simple. Here are three cases, and every one of them were improprly diagnosed. One case had been diagnosed as a renal disorder due to a floating kidney, with no ameliorating symptoms at all. Another case had been diagnosed and managed with a view to its being a cancer of the stomach, carrying out Dr. Eastman's idea here. Another case, a case which was one of true fat necrosis following the biliary disease, had been treated for three weeks as a typhoid infection. There is something wrong in Denmark. It is time that the men are waking up to the significance of biliary diseases, the proper interpretation of symptoms existing, etc.

I brought this subject before you to illustrate simply one thing, and that is the fatality that may come from these remote pathalogical sequences in gall-stones. How many of you are treating or are persuaded to treat your cases of gall-stones in a medical way? Gall-stones when once existing are absolutely no longer medical. There are two sides to the question of cholelithiasis, and that is the medical and the surgical aspect. The medical aspect exists only up and into the formation of the stones, but so soon as they are formed, so soon as they exist, then the case is no longer a medical case at all, but it is a surgical case, and in view of the light of surgery we would have a perforation of the gall-bladder, and would not have gall peritonitis, but we would have pancreatitis, and obstructions, and what not. There are remote pathological conditions which follow upon the heels of the gall-stones and will follow in cholelithiasis if we treat them in a medical way, but will not if they are treated in the proper surgical way.

SOME PRACTICAL POINTS CONCERNING CERTAIN JOINT INJURIES AND DISEASES.

DR. MAYNARD A. AUSTIN, ANDERSON, IND.

The various articulations of the body are peculiarly susceptible to injuries of a certain class, and also to invasion by many forms of infection. Joint injuries are usually the result of direct violence, a blow or fall being the cause of the majority of injuries we are called to see. Of the infections we have to contend with we must mention tuberculosis at the head, gonorrhea and rheumatism closely following, and the other infectious and pyogenic bacteria adding to the numbers in not inconsiderable proportions.

The joints affected, with regard to their importance and frequency of involvement, are respectively the knee, hip, elbow, ankle and shoulder. To attempt to cover the entire subject of joint injuries and diseases is entirely out of the question, and you would have only the substance of such articles as are exhaustively treated in your textbooks, so my paper will be a description of a few cases that have been of particular interest and value to me.

Two of these cases were injuries of the elbow, of which the following are their histories:

Case I. Boy aged 17, employed in a factory to run an auger machine, cutting a circle two inches in diameter. In some manner the machine caught the boy's coatsleeve, drawing the elbow into the auger. Fortunately the coatsleeve was rotten and tore away from the body of the coat, otherwise the arm would have been horribly mangled. As it was the injury was confined to the elbow joint, and when seen by me, half an hour after the accident, I discovered the joint to have been torn open over the olecranon process, and the olecranon split down the center. The head of the radius and the base of the humerus were also bitten into but

not suffcient to cause any probable functional disturbance. The arm was thoroughly cleansed with soap and water, shaved, cleansed with alcohol and ether, the portions of the olecranon and radius that had been chipped away were removed and the capsular ligament sutured over and closed. The skin was closed over this without drainage and dressed with the arm extended upon a straight splint. Primary healing was secured with no deformity, and no greater disability than the apparent weakness on extending the arm, caused by the limited attachment of the triceps upon half instead of the whole of the olecranon.

Case II. This was that of a boy employed in one of the glass factories who, in scuffling with another, was tripped and thrown to the ground upon a lot of glass, the other fellow falling upon the boy's left arm and elbow. I saw the case about an hour after the injury, and found the elbow joint opened up by a cut over the olecranon, which had also cut the posterior portion of the capsular ligament open for a distance of over an inch. The wound was fearfully dirty, small pieces of cinders and glass being ground into the wound, which was cleansed as in the first case.

I sutured the capsule of the joint and drained the skin wound. In 24 hours the boy had a temperature of 103, and, on redressing, the arm was beginning to swell. Alcohol compresses were applied and the dressing was kept saturated with equal parts of glycerine and alcohol. This mixture represents all the virtues of the different mud poultices, with the additional benefit of the alcohol. Gauze saturated with this mixture and covered with an outside dressing of oiled silk represents a handier, cleaner and more hygroscopic poultice than any clay poultice on the market. It is also cheaper and always at hand. It requires no heating, spreading or mussing with and gives you a 40 per cent. alcohol dressing, which is a marked antiseptic. If there is any discharge, the dressing will absorb it, which is something that we don't get or expect with the other poultices; in fact, we can't use antiphlogistine over a discharging wound unless we provide an outlet.

The stimulation from the above dressing in this case of elbow injury caused a rapid subsidence of the pain and fever, and in

four days the temperature was normal. In ten days the wound had entirely healed on the outside. The inside wound of the capsular ligament had closed primarily preventing a synovitis. The character of the skin inflammation was also one that I have observed in but one other case. The infection was one limited to the skin, a dermatitis called by Senn "erysipeloid." After the first reaction the skin began to assume a violet red hue, the swelling was progressive and gradually extended for two weeks until it reached half way to the shoulder and down towards the wrist. There was no fever after the fourth day and the pulse showed little or no reaction. There was no pain and little or no tenderness. Some trace of it was visible at the margins for nearly three weeks. The other case of erysipeloid observed by me was that of a woman who had fallen from a step-ladder, striking her shin-bone and producing an abrasion that appeared innocent enough for several days. The swelling then appeared and slowly progressed for four weeks. There was no fever or pain at any time. No special symptomatic constitutional disturbance and no added disability save the unhealthy and slow healing of a very small wound. In both of these patients there was a decided neurotic tendency.

Case III was that of a boy who had been accidentally shot with a flobert rifle. The bullet entered the left knee joint, passing from the outer side on a level with the condyles of the femur, through the skin and under the quadriceps tendon. The bullet not lodging where it interfered with the motion of the joint, the skin wound was opened up and thoroughly curetted and cleansed, the margins of the wound were trimmed away and the skin wound closed without drainage. The limb was dressed in an extended position and the boy made an uninterrupted recovery. I charged the father of the boy a fair fee for my services, but it was necessary for me to sue the man before settlement was secured. He testified that I "never did a thing but wash the boy's leg." It is surprising even now to know how many doctors can not withstand the temptation to probe for bullets. There is but one locality where it is demanded of the surgeon to remove a bullet in spite of its apparently benign presence after the injury. This ex-

ception is the lodgment of a bullet in the brain. I have had seven of these cases in my experience, most of which were seen in Dr. Murphy's service in Chicago.

Following an operation in which the bullet had been located with the X-ray pictures, Dr. Murphy made this remark: "It is surprising the amount of damage a bullet can cause in the brain substance, and more remarkable is the little apparent disability it produces afterwards. Nevertheless this temporary period of well-being is but a transient one of varying duration. My observation of this class of cases shows that all of them sooner or later will become mental defectives unless that bullet is removed."

Whether it is the chemical action of the lead or the pressure of the lead which has dropped by its own weight from its original position to one producing pressure upon some vital center, is not definitely decided, yet it is a fact that no bullet can remain in the brain substance any length of time without producing serious and ultimately fatal consequences.

Case IV. This case is mentioned because of its peculiarity only. It was that of a ball player who, in attempting to catch a foul tip, had the ball strike him upon the end of the left thumb. The thumb was in such a position that the full force of the ball was expended upon the metacarpo-phalangeal joint. The head of the first phalanx of the thumb was dislocated backwards and driven through the skin. When seen by me the head of the bone was protruding through a clean straight tear of the skin over the metacarpo-phalangeal joint. The sheath of the joint was torn apart and the bone had passed between the two extension tendons. The parts were thoroughly cleansed and the dislocation reduced. The tears were sewn up and the thumb dressed in extension. No pain or tenderness necessitating a change of dressing for several days, I saw the case again on the eighth day, when I removed the skin sutures. In two weeks the thumb was taken from the dressings entirely and perfect motion was secured.

Compound dislocations and all compound injuries of the joints call for a maximum knowledge of the principles of cleanliness. Every open joint should be treated with the same care in its at-

tention as one would give to the peritoneal cavity. The limb should be scrubbed from the nearest joints above and below, or for a sufficiently safe distance on either side. Following a thorough scrubbing the parts should be shaved and scrubbed with some ethereal soap, of which we have a number of excellent makes upon the market. Following this second scrubbing, the use of alcohol and ether will dissolve out some of the grease from the pores of the skin and take with it a further number of possible dangerous bacteria. This result can be obtained with soap and water alone and in some cases is more efficacious, but requires considerable more time and a continuous maceration of the tissues with the soap solution. *A scrub brush applied to a relatively clean skin is productive of more damage than it does good.* It produces abrasions that give an extra nidus for infection. If the brush is applied sufficiently vigorous to produce results you will have a dermatitis ensue and cause an infection of an otherwise clean wound. Soap and plenty of boiled water before and after shaving are the means that must be employed to secure clean results. If these simples are used properly and sufficiently, you have no occasion to use antiseptics in any form. No powders or solutions are needed about the joint. Nothing is needed save sterile dressings and sutures. In this place let me suggest a new material that in my hands has proven more valuable than either silkworm gut or catgut for general work. I refer to the so-called "celluloidin." It is simply a linen thread saturated with a preparation of celluloid. It can be perfectly sterilized by boiling, and repeated boilings do not weaken the strength of the thread. It can be used for everything save where an absorbable suture is required. It is cheaper than silk or silkworm gut. It possesses all the advantages of both these sutures, with none of their disadvantages.

The after care of joint injuries is a subject that has recently enjoyed considerable discussion. The question of passive and active manipulation, massage and period of immobilization has been discussed pro and con for some time. All of these are factors of importance at some time during convalescence. These things, however, must be remembered:

First: A joint injury in which the bones are involved, without the probability of a permanent deformity, should be placed at absolute rest and kept there for a period long enough to allow of a complete reparative process to have occurred in the bony lesion. The dangers of a stiff joint are little or none, in comparison to the possibilities of a nonunion.

The joints may be stiff and there may be adhesions, but these can be easily overcome. Some cases may seem so painful in the manipulation that they may require an anesthetic, in which instance it is well to make complete restoration of motion. The use of ethyl chloride will be found ideal in these cases, for it produces immediate anesthesia, seldom requiring over a minute if the regular ethyl chlorid inhaler is used. The recovery is as prompt and the dangers, complications and after effects are practically none.

Active and passive motion should be attempted only at such a time as we can feel there may be no inflammation which may be renewed or augmented. It should be instituted only after the probable restoration of any special dissolution of continuity, in the bones, muscles or tendons.

Massage is of value at any and all times, providing it is used in a manner that will produce anabolic and not destructive metamorphosis. This measure is like the application of heat. It can be as a stimulant or as a destructive agent. In this instance I frequently use this illustration to impress my patients with what result I desire. "When you put your hands in hot water and keep them there for a minute or two, you notice that they become swollen and red. If you retain them in the hot water for fifteen or twenty minutes you will observe that the swelling disappears and that the hand becomes blanched and wrinkled." Now, the first action is a stimulant to the vaso dilators and causes a lot of new blood to come into a tissue, carrying with it the materials for regenerative processes. This is the sort of a reaction one desires for massage, just enough to produce a relaxation of the blood-vessels and tissues, and a complete saturation with new blood. If congestion or inflammatory conditions are to be

overcome, then we must have recourse to the secondary heat action, the one that drives away the blood from the tissue and in its emigration carries away with it the toxic and biotic products of the bacterial invasion.

A sprain is a partial dislocation, and usually is accompanied by the rupture of some of the ligamentous structures about a joint. A certain amount of swelling occurs and we find the greatest relief from absolute rest and the continuous application of heat. For the average sprain the use of adhesive plaster in immobilization will be found far superior to any other method. Even where it is necessary to use a splint, adhesive strips will permit of the maximum of retention with a minimum of apparatus, giving one constant access to the joint and allowing of sufficient space for massage.

About a year ago I reported among several unusual cases, one of fracture of the carpal scaphoid, that came to me for treatment supposing it to be a sprain. Since then I have observed and verified a second case of this condition, and a study of its symptoms and diagnosis will possibly clear up and account for numerous cases of supposed sprain of the wrist that have proven intractible to all forms of treatment, and have resulted in a permanently painful and weak hand.

All injuries of the hand and wrist in which there is no apparent deformity are dismissed as sprains, and the advice given indicates that time and patience are the two most important factors in securing a cure. Up to four years ago this condition of fracture of the carpal bones had been practically ignored or considered as a freak condition. That it is a common one is emphasized by Scudder in his last edition, in which he says: "There are many cases of painful wrist, 'rheumatism' about the wrist, weak wrist and sprained wrist, that are simply unrecognized fractures of the scaphoid bone."

The points to be considered in diagnosis of this condition are as follows:

There is usually no great swelling about the injury.

The fingers have their normal flexibility, but the active and

passive motions of the wrist are limited to one-half or less of their normal arc of rotation.

The presence of a definite point of pain and tenderness over the scaphoid bone or tubercle.

The verification of the diagnosis by X-ray examination, which will show a line of fracture with or without some dislocation of fragments.

The treatment of this condition is absolute immobilization for three weeks at least, when, if not united, it becomes a permanent nonunion, and can only be remedied by the removal of the fragments, should pain or disability become such as to warrant operative procedures.

In those cases where the injury is such as to make it probable that the result will be a permanent deformity, bear these things in mind. Share the responsibilities in the case with a consultant. Inform the family of the probable defect in the presence of the consultant or a disinterested witness. Don't take too many chances by relying upon the gratitude of your patients, and if you have any considerable emergency surgery to do place your probable liabilities in the hands of a reliable indemnity company. In other words, take out and carry insurance against malpractice.

In this instance let me give you a little information as to the question of malpractice insurance. There are two forms of policies, one of which is all right and the other of questionable value. One policy provides for defense and the other kind offers tribute. The policy you want is the one that guarantees to fight the other fellow to a standstill. No doctor can afford to have any case compromised, and any policy that provides for a compromise in a malpractice suit offers a reward to any man that has any kind of a questionable result follow a surgeon's services. The fact of having to exhaust a reserve fund of $2,500 in legal manipulations will deter the majority of complainants and cause the average lawyer to hesitate before taking a contingent fee case, with any such certain lengthy and strong opposition.

The cost of such protection is so low that no one with any

possible liability can afford to assume it on their own responsibility, when it can be shouldered upon some one else at a cost at not to exceed eighty-seven cents a month for $5,000 protection a year.

In addition to the above remarks pertinent to the question of joint injuries, I wish to report three unusual cases of joint disease.

Case I. This was a girl whom I saw first in February, 1905. When first seen by me she presented few evidences of illness. She was about 18 years old, well built and of negative family history. Her own personal history was also negative of anything having a bearing upon the case. When brought to me in consultation she was complaining of her left ankle. She gave a history of having been under treatment for six months for rheumatism, with no relief. She had been having fever at times and the foot was swollen and tender over the region of the astragalus and about the ankle. Her temperature on first examination showed two degrees of fever. Her pulse was running up to 140. It looked suspicious of tubercular trouble, yet the general summary of the case contradicted such a probability. I examined the blood, finding it negative. Urinalysis was also negative, although she gave a history of a severe attack of scarlet fever in childhood. Physical examination over all the rest of the body was also negative. I stopped all medication, for her stomach had endured so much that it had begun to show signs of failing. The foot was placed in a plaster cast and kept there for nearly three weeks, being removed twice to examine for any special changes. On the removal at the end of the third week the side of the foot was distinctly fluctuating. The foot was immediately prepared and aspirated, withdrawing over an ounce of typical tubercular pus. Her condition improved for a short time, but then began to rapidly grow worse. She had chills and some cough. Chest examination at first showed no change, but latterly there was a definite area of diminished resonance and flatness over the left apex. Sputum examination negative to the end. The abscess cavity in the foot was injected with a 10 per

cent. emulsion of iodoform and glycerine. Beginning with a chill and high fever several days after aspirating the abscess cavity, she rapidly grew worse. Chills and fever to 103½ were the daily showing. Six weeks after seeing her for the first time she had developed meningeal inflammation as one of the evidences of a profound miliary tubercular infection. Death occurred in six days following the onset of the meningitis.

This case shows the necessity of a more definite understanding of the differential diagnosis of rheumatic and tubercular joint conditions. I believe that this girl's life could have been spared a longer time had the proper hygienic and constitutional treatment for probable tubercular disease been instituted in the first place. For six months she had been medicated not only inffectively, but disadvantageously. Nothing can produce glandular inefficiency of the stomach as quickly as the iodides and salicylates. I make no condemnation of the first physician who attended the case, for he was succeeded by several others, and when I saw the case they had been giving the girl a course of patent medicines.

The differential points to be considered in these two conditions are the following:

Rheumatism is a poly-articular affection, tuberculosis seldom or never involves more than one joint. A single painful joint in a child must always be thought of as a possible tubercular focus.

Rheumatism is a febrile condition that is self-limited in its duration and one of its best remedies is six weeks' rest. Tuberculosis of bones and joints shows a temperature above normal only after a considerable time has elapsed following the onset of the disease. Some authorities deny the possibility of a fever from other than a mixed infection. In the later stages of a tubercular infection we also have the characteristic rapid pulse which is not found in the usual rheumatic cases.

Chronic rheumatic arthritis resembles a chronic tubercular arthritis, yet a chronic rheumatism seldom exhibits a rapid heart action and is a condition that is so long under the influence of climatic variations as to allow even the patient to make a correct diagnosis.

In acute rheumatism in children we usually find a heart complication, and this one sign enabled me to differentiate a case seen in consultation not long since. The girl had been sick for two weeks, the last few days having symptoms of a tubercular meningitis. On examination I found a mitral insufficiency and a knee and elbow joint swollen and painful. The girl was having a high fever and delirium. Ice bags were applied over the cardiac region and antirheumatic remedies given. An ice bag was also applied to the head and the meningeal symptoms disappeared with the fever. The case progressed afterwards as an acute rheumatic condition, but was further complicated by a very severe chorea.

It must also be remembered that tubercular pains are not dependable as to localization. The pain in tuberculosis of the hip joint is complained of as an affection of the knee. The pains in the early stages of tuberculosis of the spine are complained of as coming from the stomach. The pain in tubercular joints is a constant condition, and usually exacerbations are complained of, principally at night.

The treatment of tubercular joints can be summarized in the word of Dr. Murphy: "Tuberculosis of any part of the body, save the intestines, will heal of itself, or has that inherent tendency, provided the part is placed at rest." Immobilization is the first and most effective means to be employed. Constitutional upbuilding covers the rest of the treatment. Forced feeding, fresh air, sunshine, and a few symptomatic remedies may be judiciously used. In some of the chronic cases where abscess formation has resulted, 70 per cent. of recoveries have been reported from the injection of iodoform-glycerin emulsion. Those joints containing pus must be aspirated under the strictest aseptic precautions, and the emulsion injected in a manner that will allow of the hermetic sealing of the opening. The entrance of a mixed infection will probably defeat the purpose of any conservative measure and nothing afterwards short of an erasion or excision will prove of benefit. In some cases it may progress to such an excess that amputation must be resorted to.

The second case is that of a case of true "coxa vera," a condi-

tion simulating tubercular hip-joint disease so much that its differentiation demands not only all the positive evidences of tuberculosis to be excluded, but also requires that a further examination be made by the X-ray, before an absolute elimination of tuberculosis can be made.

Nicolas Senn in the American Medical Journal for June, 1905, gives an exhaustive report of his observations in these cases. The case of coxa vera that I have recently observed is in a girl eight years of age. She first noticed the pain in her hip three years ago, and for a time it was very severe, radiating down her leg to the inner side of the knee. The family considered the pains as growing pains and called them leg aches, which they supposed would disappear of their own accord. The pains lasted for several months, diminishing gradually until at the time I saw her it was only an occasional thing for her to suffer anything at all. When she walked into my office she had the typical limp of a hip-joint case of tubercular origin. She gave a history of no other scrofulous evidence, but the mother said a second child of hers had died two years previous with an inflammation of the brain, which from her description was possibly tubercular.

Examination of the girl showed the limb adducted and the foot rotated outward. There was both an apparent shortening from a tilting of the pelvis and a real shortening of the affected limb, amounting to one-half an inch. There was, however, no tenderness or pain on motion of the hip joint. There was no tilting of the pelvis on extreme flexion of the thigh on the body. I have an X-ray picture of the case which reveals no disturbance in the head of the femur or in the acetabulum. It shows some reduction of the angle of the neck of the femur on the affected side.

The following points are the ones we must remember before deciding upon a case as tubercular: There must be not only pain and deformity, but temperature, tenderness and some other constitutional disturbance. Tuberculosis is a progressive disease frequently resulting in abscess formation. Coxa vera never produces pus. Pain and tenderness are marked features at some stage of tubercular disease, but in coxa vera the tenderness is never a

prominent sign, however much pain there may be. Tuberculosis gives a usual history of slow onset, pains referred to the knee and disinclination to run about and play as usual. Coxa vera comes on with a history of an abrupt onset of pain in the hip and knee, with shortening and rotation as an early accompaniment. In tubercular hip-joint disease we have the deformity to appear only as a late symptom.

Coxa vera is a disease of the bone-growing period, and usually observed before the age when the bones are fully formed or ossified. It is considered by some as a rachitic condition, by others a juvenile form of osteomalacia. It is a condition produced by the softening of the neck of the femur, and may be accompanied by deformities in the feet amounting to flat-foot. In some cases of this disease there is a tendency to fracture on slight injuries and several cases are on record where resection of the head of the bone was performed for supposed tubercular disease, when it was found there was a defect in the neck of the femur resulting in a fracture and displacement of the head of the bone.

General constitutional stimulation and rest with and without extension, as indicated by the rapidity and progress of the disease, covers the treatment of the case. In my case I used a similar apparatus as that used for tubercular disease to secure rest for the limb and to correct if possible the shortening.

Case III. This was that of an unusual septic condition of the knee joint, a septic cellulitis simulating a septic inflammation of the knee joint itself.

I saw the case in consultation on the fourteenth day after an injury to the knee had been received, the knee having been struck against the side of a wagon wheel. No difficulty was experienced for a week after the injury, but in twenty-four hours after pain was noticed the knee was swollen twice its normal size. Antiphlogistic measures were used for a week before I was called into the case.

Ordering ice bags, I was able to relieve the pain within a few hours. On careful examination there were two factors that were lacking to make it positively certain that the knee-joint itself was

involved. One was the absence of the patella "floating" as it is termed, on the top of the effusion. The other was the position of the limb; it gave the most relief when in the extended position.

In septic infections of the knee with effusion, the knee is generally found flexed, and any attempt to straighten it is met with great pain and resistance. Also the patella lies above the culde-sac of the synovial membrane that separates the quadriceps tendon from the femur, and any degree of effusion floats the patella to the top.

I aspirated, inserting the needle carefully, opposite the middle of the outer side, and found pus. I followed my aspirating needle with an incision large enough to admit a pair of dressing forceps, pushed these carefully under the skin to the same position on the inner side and pulled a drainage tube carefully through over the patella. Nearly a quart of pus was removed and the day following a second tube was inserted longitudinally downwards and forwards. In five days the inflammation had entirely subsided and in ten days I dismissed the case.

Had I in this case mistaken the situation of the pus by overlooking the deep position of the patella and attempted drainage by the insertion of drainage tubes under the patella, as is done in synovial inflammation, I would have had an infected knee joint, a stiff knee and possibly a one-legged patient.

Case IV. This case was one that had received treatment at our hospital for several months for rheumatism. While walking in the yard, the patient's limbs suddenly gave way and he was so weak that he had to be assisted to his room. Both knees began swelling soon after and the swelling in the knees was followed by an edematous condition of the foot and leg. A diagnosis of white swelling was made by the attending physician and amputation of both limbs was advised. The feet and legs finally reached a size that they resembled elephantiasis. The pain had left with the onset of the acute inflammation, and ulcerations appeared on the legs and feet. The man was finally sent to the poorhouse, where I saw him first, and made a diagnosis of charcot's disease, which has been verified by its subsequent course. Charcot's dis-

ease is possibly one of the rarest conditions a surgeon meets. I saw none in three years' hospital work in Chicago. A friend of mine saw one case after eighteen months' clinical work in Berlin and Vienna. This condition is supposed to be a trophic disturbance following syphilitic infection, or, as Charcot terms it, a chronic syphilitic arthropathy, and osteopathy. The joints involved in this condition may be the knee, elbow or hip. Generally a single joint and most often the knee. In my case both knees were involved. The ligamentous structures and surrounding muscles and tendons atrophy, and we have a joint that can be moved in all directions with equal ease. In this case the foot could be drawn up to the chest by hyperextension, or the leg could be moved laterally at right angles with the thigh. The arch of the foot breaks down and a peculiar flat-foot condition results. The enormous swelling that affects the knee and leg at first gradually disappears, although many months or several years' time may elapse. At the end of four years' time my patient's limbs were nearly normal in size. Perforating ulcers of the feet and trophic ulcers of the limbs have remained. The patient has little or no use of his limbs, but by binding his legs supported by two hickory lathes he has a limited area of motion on crutches.

I show a photograph of this case taken recently, that shows a portion of the deformity and the remains of a trophic ulcer.

DISCUSSION.

Dr. David Ross of Indianapolis: Dr. Austin's paper is certainly a most excellent one, and is one of the most interesting ones that we could have at this time, for the question of joint injuries is very interesting and very important to physicians. We must not risk the danger of a deformity, and with that the loss of the function, which is greater than could come through any other injury. This paper is a wide one and comes near covering all of the points. I wish to say a few words in regard to compound injuries. Certainly nowhere is surgical cleanliness of more importance than in a case of joint injury, as the doctor has said, and if we can realize this in its fullest extent it will be one of the first and most

important steps in the treatment of the injuries to joints. The great drawback to this is the pain it causes the patient, but we should close our eyes to this as far as we can, in so far as it is necessary to get the joint clean; if it is necessary give an anesthetic in order that the wound may be cleaned as thoroughly as it is possible to get it. When we find a case where there is grease and dirt ground in the wound we must see to it that it gets a thorough cleansing; do it as thoroughly as work can be done. Clean away any shreds and foreign matter.

In regard to the question of manipulation. I think that perhaps in times past we were too radical on this point. I think this should be left until healing has taken place, for I think that any joint is more injured than helped by manipulating when healing has not taken place. In cases of injury to the wrist we can manipulate the fingers and thereby prevent the adhesion of the tendons, and this is a place where we can manipulate with profit; but when it comes to manipulating the joint itself, and especially in these compound injuries, unless healing has taken place and inflammation has subsided, I think we do injury rather than good.

Dr. E. D. Clark, of Indianapolis: I would like to say a few words in regard to adhesions, whether they be from sprains or from a fracture. I can hardly agree with the doctor that the thing to do is to break them down, possibly putting the patient under an anesthetic and breaking them down violently; I believe there will be an inflammation and a reformation of them. I believe the best method of getting rid of ankylosis is to gently break them down, or limit the violent parts to the toleration of the patient every day rather than attempt to give an anesthetic and break them down violently.

I can hardly agree with the doctor as to the treatment of tubercular joint affections, and in regard to the injection of oil of vaseline. I have used it to a considerable extent and have not been favorably impressed with it at all. We have finally had to resect our joints, and I have found the tissues saturated with iodoform and tubercles thriving all through it. I know that Senn is a great advocate of this, and it has its place, no doubt, in

certain tissues, but I do not like it in joint affections, because of the fact that your disease does not begin in the joint in ninety-five per cent. of the cases; but I believe the disease begins in the bone, and I do not believe that any injection will eradicate that disease. The best method to get rid of these things is to take them away as you would any other infection.

Dr. Rosenthal, of Ft. Wayne: I shall never forget the parade of sixty or more cases of tubercular bone affections which were treated by iodoform which I saw in Berlin. I could not help being impressed with the fact that we do have and can get good results by the injection of iodoform into the tubercular tissues. If you have a secondary infection and you have a discharging sinus, and will aspirate the cavity and fill it with iodoform you will get results I am satisfied.

I wish to emphasize the necessity for cleanliness, thorough cleanliness, in compound wounds and joint injuries, and especially of mechanical cleanliness, and I believe that in cleaning one of these compound injuries that we should take plenty of time instead of using irritating appliances. We should use no anesthetic that has a tendency to bring about inflammation or an inflammatory reaction. I saw a case about a year ago of a compound fracture of the patella. A young man was kicked out of his buggy, and in doing this the horse kicked over the dashboard and with the hock cut the patella in two. The knee joint was filled with sand and dirt from the street. I saw the patient at the place where the injury took place, and bound the wound in a moist cloth, which I secured and sterilized at a neighbor's house by putting it into the oven. We then took this patient to the hospital and washed the wound with a lye soap solution; I like this because it is a sufficient antiseptic. We washed the skin carefully, also the joint, and irrigated that joint for fully half an hour with a normal salt solution. We put the patella together and secured the soft parts with catgut, but we left the wound so that there could be access of air. This wound not only healed nicely by first intention, but the man has an absolutely movable joint, which is as good as the other one so far as we can see, and

he says it is as good as the one which was not injured, notwithstanding the presence of the filth from the street. The mark from the horse's shoe is distinctly visible upon the front surface. Now, I believe that a thorough mechanical cleaning will give better results and is better surgery than that which is brought about by an antiseptic, as you are less likely to get ankylosis from an inflammatory reaction.

Dr. L. D. Dillman, of Connersville: I should like to speak of one point. I think that in a great many cases we have overdone the use of the scrubbrush, for you have possibly cut the parts, and have stirred up dirt that otherwise would have remained inactive. I have lately begun the use of a soft brush, but I do not use it as I originally did, but more as a massage to carry away the infectious material. I think this is much better than to use the rough brush, followed by a strong antiseptic solution which robs the tissues of their vitality and their power to rid themselves of the infection which is normally given to them.

Another point: The doctor told us that he always manipulated the sore joint. Now, there may be and certainly are a number of cases in which some manipulation is proper, but none of us would want to manipulate a tubercular joint, though the pus in the joint has long ago become extinct, for fear there might be some produced by this rough handling, and would be set free and you would repeat the old trouble where you thought you had it cured. I have had a number of cases lately in which I have tried more or less the B..... method, and I must say that in one especially I have had excellent results, but I am not through with the case yet. I have accomplished so much more than I have ever been able to by any other method that I propose to stick to it in this case.

I notice in the treatment of tubercular joints that in the last two or three months some surgeons have begun not to merely aspirate a joint, but they open it with one, two, three or four incisions placed in the anterior surface of the joint and wash it out with a three per cent. carbolic acid solution. I have no statistics at hand to show just what the results have been. I think they

would be different in the treatment of tubercular joints when the process originated from the synovial lining, or whether in the bone, or if there is cauliflower excresence inside of the joint, for when you open it it looks like a cauliflower. I do not believe such joints would be benefited very materially by any method of injection.

Dr. Charles Stoltz, of South Bend: I wish to add my treatment from observation and experience as to the value of an iodoform solution for tubercular joints. I believe you have them classified in three classes, the first for complete rest; and second, where there is damage to the joint that is too extensive for that; and third, when you have an absolute surgical joint. The outcome, of course, will depend largely on the character of the adhesion and the extent to which the tubercular process has grown. This matter of mobilization as suggested, following the fracture of a knee joint—I believe we are entirely too overzealous about that. You can keep the joint tied up for a long time without needing to have any fear about the joint becoming permanently ankylosed. I made an experiment on a number of goats and a number of them went as long as three hundred days without the joint becoming ankylosed. I do not care to take the risk of exercising this joint; the patient may be in bed two or three weeks longer, but I would rather he should do that than for me to suffer for two or three years afterwards.

Dr. W. D. Schwartz, of Portland: I would like to make a few suggestions in regard to an antiseptic. There has been so much said about the disease-producing germs by teachers in the country and surgeons to such gatherings as this that I feel that the majority of the practitioners of the country are using antiseptics that are too strong, and in this way they are doing more harm with them than they would without them. If they were not allowed to use bichloride of mercury or carbolic acid they would get along better than they do. There are a number of factories in our town, and I found that it was the practice of the superintendent or the bookkeeper, whichever one was in charge, when a man was injured, to pour turpentine into the wound. Now,

that devitalized the cells so much that they were unable to repair the tissue, for the cells were destroyed. It stands to reason and you can rest assured that an antiseptic that is strong enough to destroy what comes in contact with the cells must of necessity lower the vitality of the cells so much that the repair will not be so prompt as if it had not been used at all. In another factory they were in the habit of using carbolic acid before the patient was sent to the doctor. I positively told them that I did not want them to put anything on the wounds of the ones they sent to me, for I would do everything at my office. I wash the wound thoroughly with sterilized water, and do not use an antiseptic at all, but get rid of the disease-producing bacteria by mechanical means.

I remember some time ago a buzzing wood farmer—that is what we call them when they saw wood with a buzz saw—was sawing some rails and on the end of one of them was some frozen ground, and when the saw struck it it slipped and cut his finger off, all but just the front skin. I did not think of its uniting, but the man wanted it left on if there was any possiblity of allowing it to do so, and I told him I might leave it on and see what it would do by the next day. The finger was warm; I cleaned it out thoroughly and dressed the wound and bandaged it and did not use an antiseptic at all, but kept it in sterilized water for a considerable time and then bound it in soft cotton and sewed it together and the finger got well without any suppuration. I do not like the use of strong antiseptics.

Dr. Austin, closing: The points on iodoform injection have been covered by Dr. Rosenthal. The reports from Chicago show that in complicated cases of primary tuberculosis infection about seventy per cent. are injected with an iodoform solution. The occasional cases which we of the smaller places get should not be taken as criterions as to whether we can get results or not; we want to go to the bigger men, who have a procession of cases coming to them, for our results.

As for the use of brushes, I have discarded them altogether and I simply use green soap or Grandpa's Wonder soap as much as

anything. When I do the work in the country I simply get hold of a bar of soap and I have my work as clean as I could have it with any antiseptic that has been made; I buy no antiseptic of any form, and the majority of my operations within this period have not had a single drop of pus in them. I have eliminated the brush and the antiseptic from my work entirely.

In regard to corporation work I have got around that by keeping a case of surgeon's tubes, about five yards of gauze, a pound of cotton, a dozen bandages, a roll of adhesive plaster and a can of green soap, and I tell these people that when some of them get hurt they should put some of this soap over the wound immediately. It will smart a little bit, but when the patient comes to my office in from ten minutes to a half hour after the injury I have no trouble in cleaning the wound, and I have no pus.

REPORT OF EIGHT CASES OF BRAIN TUMOR WITH COMMENTS ON THE ETIOLOGY, PATHOLOGICAL EFFECTS, CLINICAL MANIFESTATIONS, DIAGNOSIS AND TREATMENT OF BRAIN TUMORS IN GENERAL.

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Case I. Female age 43, picked up as a tramp on the street, only living a few days after. Affected with general tuberculosis. She had suffered with neuralgia for some time, in addition to the tubercular affection of the lungs and intestines. The respirations were from 30 to 40 per minute, the pulse from 85 to 100. Speech was slow and difficult. There was a gradual onset of coma, increasing in degree until death supervened. The autopsy disclosed a diffuse nodular involvement of the meninges, most marked at the base, and a small nodule, about 5 mm. from the median line, and the same distance from the ventral surface of the upper extremity of the pons, left side.

Case II. Male, age 57, machinist by occupation. Began in March, 1901, to complain of dullness of hearing, numbness of the left side of the forehead and scalp tending to become painful, headache on the left side and back of the head, which was relieved by lying upon the right side. Also dizziness in the dark, upon rising from a chair or stooping over, everything becoming black. These conditions were continuous, gradually increasing in intensity and severity. In March, 1902, it was discovered that he masticated his food wholly on the right side, owing, as he said, to his not feeling it when on the left side. In May examination showed that the pupils reacted normally to light and accommodation. No optic atrophy. Pulse 64. Arteries somewhat thickened. Urine normal. In August, diplopia and dimness of vision were manifested. By October there was entire blindness and double optic neuritis. The deep reflexes were increased, Babin-

ski's sign was present, also ankleclonus, Cheyne-Stokes respiration, projectile vomiting, attacks of syncope, convulsions and death in coma in January, 1903.

Autopsy disclosed an oval, elongated, moderately firm, reddish-white tumor, 5 by 2½ cm. in size, springing from the left mid-cerebellar peduncle, on its posterior and superior border, extending forward to the tip of the petrous portion of the temporal bone, lying beside the pons and left crus, pressing against and causing absorption of the bone around the internal auditory meatus.

Case III. Female, age 50. Admitted to the hospital in May, 1904, with manifestations of restlessness, sleeplessness, melancholia, seclusion and delusions of apprehensive harm and injury. There was a history of blindness for 32 years following a sickness, the nature of which could not be ascertained. While being brought to the hospital she was thrown from the carriage and severely shaken up, but no definite injuries were found upon examination at the time of admission, and the patient merely complained of feeling sore all over. Eight hours after admission she suddenly expired.

Autopsy disclosed a small oval-shaped, reddish-gray mass, about 3 by 1 cm. in size, involving the middle lobe of the cerebellum and extending into the right lateral lobe to the outer margin of the dendate nucleus. The left occipital lobe was smaller than the right and its convolutions somewhat smaller. Both optic tracts and nerves were small, gray and atrophic.

Case IV. Male, age 30. Admitted to the hospital in January, 1905, with a psychosis beginning a week previously, consisting of sleeplessness, restlessness, and at times violent outbreaks, disorientation, failure to recognize people, talking incoherently and irrationally, very much excited and apparently suffering great pain. On examination it was found that the sixth, seventh and eight ribs on the left side were fractured in the anterior axillary line, and that there was some fluid in the pleural cavity. Death ensued within twenty-four hours after admission. All that could be learned of his health previous to admission was that about two years before he had consulted an oculist for disturbance of

vision, who informed him that there was some diseased condition in the brain. There was also a history of severe gastric disturbance.

Autopsy disclosed a reddish-gray mass occupying the posterior and upper part of the right parietal lobe, lying anterior to the parieto-occipital fissure, extending forwards 6 cm., laterally about the same distance, while on the mesial surface it extended down to the calloso-marginal fissure.

Case V. Female, age 50. Admitted with a psychosis of acute melancholia, associated with delusions of a persecutory nature. Father died at the age of 83 of some brain trouble, supposed to be insanity. Patient had typhoid fever at 10 years of age, rectal trouble five years ago, for which she underwent some surgical operation, and to which she attributes her present condition, and from which she dates her trouble. Also reports middle ear trouble for the last five years. There was marked deterioration of memory, repetition of questions and answers, inability to recognize those about her, emotionalism mostly depressive in character, confusion in thoughts and ideas, complaining of a feeling of fulness and great pressure in the head, amounting at times to great pain, inability to concentrate her mental powers, dizziness, indistinctness of vision and great mental distress. There was present marked tremor of the hands, a staggering gait, bilateral weakness of voluntary muscles, exaggerated knee-jerks, slight tendency to Babinski reaction, slight manifestation of Rhomberg's phenomenon, and some muscular weakness. All of these phenomena were more marked on the right side. There was no involvement of the sphincters, no muscular atrophy, and no sensory disturbances ascertainable. The blood and urinary examinations were negative. There was some cloudiness of the optic disks. The course was progressive. Stupor supervened, developing into coma and death.

Autopsy disclosed an oval-shaped, rather firm mass, irregular in outline, noncapsulated, involving the left optic thalamus, presenting an ulcerated surface on the floor of the left lateral ventricle over an area 3 by 1½ cm.

Case VI. Male, age 42, occupation engineer. Admitted to the hospital with the history that four weeks previously he had

come home from work at the usual time for supper, but acting in a confused manner, and when asked by his wife as to the cause, replied, "Durned if I know." He masticated his food, but would not swallow it, would sit and watch his wife, and at times begin to cry. A physician was called, who attributed the condition to acute diabetes. After two weeks' treatment a specialist on nervous diseases was consulted, who pronounced the condition one due to cerebral softening. So far as could be learned, his family history was negative. The patient was said to have had typhoid fever when eleven years of age, acute inflammatory rheumatism at twenty-five years of age, another attack of rheumatism in 1903. He was married and had one child quite healthy. He drank some, rarely to excess, and not at all regularly. There was no history of specific infection obtainable. Examination revealed a man well developed and well nourished, with facial features flabby and expressionless, the right side more pronounced than the left. There was constant dribbling of saliva, with frequent partially successful attempts at spitting. Speech was slow, thick and slurring, with frequent elision of letters, syllables, and, at times, words. The writing was very tremulous, with reduplication of letters, and at times elision of them. The gait was waddling, with dragging of the feet, becoming more pronounced with exercise, until it would become almost impossible for him to continue. When eating, the food would collect between the teeth and gums without any attempt being made to remove it. The voluntary part of the act of swallowing seemed to be impossible, as he could not get the food back in the pharynx. Sight, hearing, taste and smell seemed to be unimpaired, but there was intense redness of both optic disks. Tactile, temperature and muscular sense could not be determined because of the profound dementia. The tongue and hands were moderately tremulous, the knee-jerks were highly exaggerated, ankle clonus was present, as were Babinski's and Rhomberg's phenomena. The superficial reflexes were also active. The prick of a pin brought a quick response reflexly. All the phenomena were more pronounced on the right side. There was no muscular atrophy, but the movements were inco-

ordinate and ataxic. The blood and urinary examinations were negative. Spinal fluid obtained by lumbar puncture gave a negative result bacteriologically. The course was rapidly progressive, terminating fatally sixty-eight days from the first definite manifestations.

The autopsy disclosed a brain weighing 1,880 grms., the dura adherent over the left frontal lobe, the surface of the convolutions flattened, an entire absence of crebro-spinal fluid, a firm nodular mass, irregular in outline, about 3 cm. in diameter, situated over the anterior, external, and inferior surfaces of the left frontal lobe. A second mass, similar in appearance, size and character, situated over the lower part of the ascending frontal, the ascending, and inferior parietal convolutions on the right side. A third mass in the substance of the left optic thalmus, several cm. in diameter.

Case VII. Male, negro, age 50. Admitted October, 1905. Family history negative, except that mother died at an advanced age with some form of paralysis.

Personal history: Patient is said never to have been sick until the present illness. History of alcohol and syphilis is uncertain but probable. About nine months previous to admission he is said to have changed somewhat and there is a rather indefinite account of increased psychomoter activity with delusions about money matters. At this time he frequently became confused, wandering away from home, especially at night. About five months after the onset of this condition while at work he suddenly lost the power of speech and soon after failed to recognize the use of knife or fork at the table, taking both in one hand. Mastication and swallowing taking place normally when food was placed in his mouth. He next became violent toward his sister, with whom he lived. Became very tremulous in both hands and feet and swayed when walking. There was no report of pain in the head, vomiting, convulsions or apoplectic attacks.

Examination on admission revealed the following: The mental condition was one of complete fatuity, with some apprehension and much resistance to examination. General nutrition fairly

good. Facial expression mask-like. Pupils unequal, the right being the smaller. Both react only slightly to light. No ocular palsies. Test for accommodation impossible. Optic atrophy marked. There was a fine tremor of the lips and togue. Vocal sounds were possible, but no articulate speech. Mastication, deglutition normal. Gait markedly spastic. Inco-ordination of both upper and lower extremities with very pronounced coarse tremor. The left knee-jerk slightly exaggerated, the right normal, if any change, decreased. No Babinski, Kernig or Rhomberg phenomena present. Incontinence of urine and feces, slight edema of the lower extremities. Resistance and rigidity rendered abdominal examination impossible, and examination of the thorax difficult, but tuberculosis of the left side was diagnosed.

Autopsy: Adult male negro, extremely emaciated, small subconjunctival hemorrhagic extravasation in the right eye, extensive bedsore over the sacrum.

Head: Bones hard and heavy, grooving for the meningeal vessels moderately deep, depressions for the pacchionian bodies fairly deep, several osteophytic protuberances on the inner surface of the frontal bones on each side of the superior longitudinal sinus, excess of subdural fluid, moderate increase of subarachnoidean fluid, which over the anterior surface of the right frontal lobe is accumulated into a systic formation pressing upon and causing atrophy of the convolutions. Dura thickened and covered on its inner surface with a fibrinous membrane-like exudate, most marked on the right side, and somewhat adherent. In the anterior part of the falx cerebri there is a calcareous plate 3 cm. anterior-posteriorily and .2-.25 cm. in thickness. The arachno-pia is extensively thickened and diffusely opaque, most marked over the frontal and upper part of the parietal lobes.

Brain weight 1,040 grms. Basal vessels extensively thickened. The right frontal lobe is smaller than the left. On the under and outer surface of the right hemisphere, midway between the extremities of the temporo-sphenoidal and occipital lobes is a quadrangular area dark mottled red in color, lying immediately over the collateral fissure, 35 cm. antero-posteriorly, and

extending over the lateral surface 1 cm., and 2 cm. mesially on the under surface, semisolid in consistency. One section is seen to extend into the brain substance 1 to 2 cm., its margins merging with the brain substance itself. Moderate dilatation of the ventricles and granulation of the ependyma throughout. The spinal cord appears small.

Thorax: Bilateral chronic pleuritic apical fibrous, band-like adhesions. Bilateral lobar pneumonia inolving almost the entire lower lobes and the adjoining portion of the upper; apical cicatrization and calcification. In the body of the lower left lobe is an area about the size of an orange semifluctuating in consistency, consisting of a degenerated semifluid grumous material. Some marginal lobular emphysema, congestion of the bronchial mucosa, hyperplasia of the bronchial glands. Extensive general arteriosclerosis and moderate atheroma.

Abdomen: Enlargement of the mesenteric glands and a moderate degree of chronic diffuse nephritis.

Case VIII. Male, age 36, admitted to the insane hospital October, 1898. Discharged improved September, 1902. Readmitted December, 1904.

Family history: Parents living and in fair health. A maternal uncle insane, one cousin epileptic. Remaining history unknown.

Personal history: Facts obtainable from the family were very meager. No account of severe illness or injury in childhood. The epileptic condition came on at the age of 16. The exophthalmos at age of about 26, but observation as to the latter point is faulty and it does not seem to have been considered important. The right hemiplegia came on at the age of about 28.

Upon admission the patient was found to have frequent severe epileptic seizures without discoverable aura and without focal prodromata. The mental state is one of arrested development. He is found to be quite amiable during his interval, but is quite irritable before his convulsions, and is apt to have outbreaks of fury following them. The mental state is one of arrested development, with outbreaks of fury following the convul-

sions, which are of the epileptic major type of extreme severity, and not beginning with any discoverable aura. Is amiable during intervals.

The physical examination is as follows: The patient is a man of medium height and unusually powerful muscular development. The cranium is apparently symmetrical except that just behind the left external orbital process is an abnormal prominence of the skull. This is not abrupt in outline, is smooth, rises 1 cm. above the surrounding skull level, and is about 10 cm. antero-posteriorly by 5 cm. in the vertical dimension. The percussion note over this prominence is quite flat, and the finger receives an impression of greatly increased resistance. It is apparently not sensitive to pressure. The eyes are prominent, the left showing an extreme degree of protrusion which is said to have increased in degree very gradually over several years. The pupils are unequally dilated, the left being the larger, and they react slowly to light. There are no palsies of the external ocular muscles. Ophthalmoscopic examination shows a rather extreme degree of optic atrophy. The mouth is drawn slightly to the left. The mental state prevents a satisfactory examination of the tongue and palate. Speech is confined to some half dozen words. There is partially recovered right hemiplegia with some contracture of hand and foot. Both knee-jerks are constantly exaggerated, the right more so. There is right ankle clonus and Babinski's toe phenomenon is present on the right side. Cutaneous sensation could not be studied.

On December 19, 1905, by a fall during a convulsion the patient sustained a fracture of the right mandible. Shock was extreme and three days later serial convulsions appeared, soon passing into epileptic status and fatal pneumonia.

Autopsy: The body is that of an adult male. Age 37, height 168 cm., weight 160 pounds, well nourished, post-mortem rigidity well marked. There is a linear scar, recently healed, over the right inferior maxilla, beginning 2 cm. to the right of the median line, extending up and backward, parallel with the lower margin, and about 1 cm. above it, for a distance of 4 cm. Hair is black,

eyes gray, left pupil 8 mm. right 4 mm. in diameter; otherwise both are uniform and regular. The nose and ears are normal. Tongue furred, teeth much decayed.

Head: The general formation is asymmetrical, due to a considerable bulging of the left eyeball, and of the whole left frontal eminential area. The head is distinctly brachycephalic in type, circumference 61.3 cm. Biauricular 38.2 cm., occipito-nasal 38.8 cm. in diameter. Scalp is 5 mm. thick and bleeds very little. Bone thickness is very irregular and unequal, thinned at one place while thickened at another, thinning being particularly marked in the outer portion of the left and upper portion of the left parietal, the squamous portion of the left temporal, and in the bones forming the floor of the left anterior and middle fossa, forming a mere shell, readily breaking with the slightest pressure. There is atrophy of the petrous portion of the left temporal bone, of the left side of the body of the sphenoid, of the anterior and posterior clinoid processes, and of the sphenoidal ridge, thus enlarging the capacity of both fossa, and by depression of the floor, the two fossa being practically continuous with each other. The thinning is much less marked on the right side. The thickening is particularly marked on each side of the groove for the middle meningeal artery, and to some extent along the sutures. At the lower and anterior part of the left squamous, just above the floor of the middle fossa, there are two cone-like projections protruding about 1 cm. into the cranial cavity, their bases gradually spreading, becoming continuous with each other at their adjoining surfaces.

There are moderate dural adhesions most marked on the left side. The dura is somewhat thinned on the left side and anteriorly. No subdural or subarachnoidean fluid. Growing from the inner surface of the vertical portion of the left frontal bone toward its outer part, and attached by a base about 6-3 cm. is a hard, whitish, irregular, nodular, cartilaginous growth, with scattered areas of slight calcareous infiltration, its weight 575 gm., its size 16-12-9 cm., extending inward and backward. On its external surface are two depressions corresponding to the two bony

prominences on the inner surface of the squamous portion of the left temporal bone. The growth extends into and displaces the external portion of the frontal, the anterior portion of the parietal and the greater part of the temporo-sphenoidal lobes on the left side. There is a second smaller growth, 3-2-.5 cm. in size, springing from the inner surface of the squamous portion, which is similar in appearance and structure to the former growth, and is attached by a narrow pedicle-like base.

There is a fracture of the right inferior maxilla just about at the point of junction of the horizontal with the vertical portion, running obliquely back, in, and upward. There is a moderate amount of callous surrounding the fracture, which is easily broken down.

The brain weight is 1,680 gms. There is complete displacement with atrophy of the frontal lobe except a layer averaging about 2 cm. in thickness on its mesial and inferior surface, also of the outer and inferior portion of the parietal lobe, and the whole of the central three-fifths of the temporo-sphenoidal lobes on the left side. The left corpus striatum and optic thalmus are also displaced inwards and downwards and are decreased in size.

The first, third, fourth, fifth, sixth, seventh and eighth cranial nerves on the left side are small, grayish and atrophic. The optic nerves, optic commissure and tracts are similarly affected, the left more so than the right. There is extensive dilation of the right lateral, and of the third centricle. The spinal cord is apparently smaller than normally.

Thorax: There is slight fatty infiltration of the right ventricle of the heart. Slight arterio-sclerosis of the aorta, most marked about the coronary orifices, and involving the coronary vessels slightly. There are extensive, diffuse, fibrous, band-like adhesions in both pleural cavities, with an acute fibrinous exudate over the base of the lower right lobe. The lower lobe and base of the upper lobe of the right lung are solid throughout and in a condition of mixed red and gray hepatization. There is slight hypostasis of the posterior and lower portion of the lower left lobe. The thyroid gland is moderately enlarged, with tendency to cystic formation. There is some hyperplasia of the bronchial glands

and some congestion of the bronchial mucosa. The remaining thoracic and cervical structures are apparently normal.

Abdomen: Apart from the kidneys the abdominal viscera do not show any gross changes pathologically. The kidneys are in a condition of chronic parenchymatous nephritis. The right renal pelvis is dilated and pouch-like, the mucosa thickened and covered with a somewhat yellowish exudate, and the cavity contains a mulberry-like calculus 1.5 cm. in diameter. The right ureter is slightly dilated. Microscopically the growth consists of practically normal hyaline cartilage throughout. The renal calculus is somewhat stratified and chemically consists mainly of phosphates, but there are also oxalates, some xanthine, and some organic constituents present.

COMMENTS.

Microscopically case 1 was tubercular, cases 2 and 3 were gliosarcomata, case 4 was an angiosarcoma, case 5 was a mixed celled sarcoma, case 6 was syphilitic, case 7 was glioma with foci of hemorrhage, case 8 was chondroma.

It is to be regretted that more complete clinical reports have not been submitted with these cases, but incomplete as they are, a summary of the clinical manifestations reported shows the presence of the great majority of those usually present in cases of brain tumor.

Irregular expansion of the cranial bones, irregular thinning and thickening absorption and erosion of the same in at least one case, increased resistance on percussion in one case, attacks of facial neuralgia in two cases, headache in two cases, feeling of fulness and pressure in one case, dizziness in two, syncope in one, great mental distress in one, disturbance of vision in five, of the pupils in two, optic disk and retinal changes in four, exophthalmos in one, disturbances of speech in four, of hearing in one, sensory disturbances in three, tremors in three, paretic conditions in four, hemiplegia in one, the knee-jerks exaggerated in three, decreased in two, ankle-clonus present in three, Babinski's phenomenon four, Rhomberg's phenomenon in three, difficulty in swal-

lowing in one, disturbance of respiration in one, gastric disturbance in two, glycosuria in one, incontinence of urine and feces in one, convulsions in two, coma in two, mental disturbances in six, are amongst those given.

It will be noticed that the great majority of them belong to those usually described as general symptoms of brain tumor, while there are very few of a localizing significance.

Another point of practical significance is the great variability in symptoms manifested. For all practical purposes the symptoms of brain tumors can be arranged under two groups:

1. Those which occur independent of the position of the tumor, or general.

2. Those directly dependent upon the interference, with the function of some local area, or focal.

Of the general manifestations some stand out prominently, and are rather characteristic, while others are vague and indefinite, but no one manifestation is pathognomonic of brain tumor. In most cases the general manifestations precede the focal and are the first to require attention. They appear to depend upon—

1. The rapidity of the growth.
2. The vascularity of the growth.
3. The pathological characters of the tumor.

The manifestations vary in intensity according to—

1. The activity of the pathological process.
2. The condition of the blood supply of the brain.
3. The size, location and character of the growth.
4. The age of the patient.
5. The indirect effects of the growth.

Headache is one of the most constant, most distressing and earliest of symptoms. Putnam and Jacoby give it as present in 74 per cent. of cases, Mills and Loyd in 95 per cent. Eskridge in 100 per cent., Gowers as being rarely absent. It is usually more or less continuous, with paroxysmal exacerbations. It varies in character, and its intensity is increased by anything that tends to increase cerebral congestion. It may be general or local. General pain is probably due to the increased intracranial pressure

pressing upon the meninges, as trephining often affords relief, but one may have a very small tumor and but little increase in intracranial pressure, yet the pain be intense; or there may be a large growth, and great increase of pressure, yet very little pain. Local pain is usually due to meningeal irritation. The locality of the pain is not always over the seat of the growth, for a cerebellar tumor is often associated with frontal headache, and cerebral involvement with occipital pain, or the pathological process may be on one side of the brain and the pain on the opposite side of the head. Usually when the growth is on the surface of the brain, the pain corresponds to the seat of the growth, when it is in the white substance the pain is often frontal, when subtentorial it is occipital, and when the growth is unilateral the pain is on that side. When the pathological process is syphilitic in nature, the pain is worse at night. In other forms it is usually worse when awake. The pain is usually less in children, due probably to the greater elasticity of the skull. There may be an intermission of the pain, especially after the administration of iodides, or it may last weeks or months, or until dementia destroys the power of its perception. While it is almost useless to speculate as to its causation, yet it is usually attributed to one or all of the following factors:

1. Increased intracranial pressure.
2. Stretching of the membranes.
3. Effusion into the ventricles.
4. Variations in the cerebral circulation.
5. Direct involvement of the meninges.

Associated with headache there is often marked tenderness on percussion, this being more common when the growth is situated just beneath the bone, involving the meninges, or in the superficial brain substance, and is a valuable indication when not due to sensitive nerve trunks.

At times there is also flatness on percussion, but this is not always present, even when the growth is superficial.

Optic neuritis occurs in about 80 per cent. of cases regardless of the seat, nature or origin of the growth. It is most frequent

when the growth is subtentorial, least so when in the meninges or centrum ovale. It is not a very early symptom unless the growth is cerebellar or basal, usually not appearing before three months after the onset of symptoms. It is usually a transient event in the course of brain tumor, as the latter condition may exist for years without affecting the disk, and then suddenly develop acutely, reach an intense degree within a few days or weeks, run its course rapidly and pass on to atrophy. The condition is usually bilateral, appearing first in one eye, consequently showing more involvement of one eye than the other. Rarely the condition is unilateral, and when so, indicates that the lesion is anterior to the chiasm. The neuritis may exist to a marked degree without impairing vision, and when impairment is shown, it will be found that the neuritis is fully developed in those cases. This is particularly true when the inflammatory process is moderate, vision often failing more during the subsidence than the active stage of the process. Sudden loss of vision is most common in children, probably because the gradual loss is not noticed by them. Central vision may be normal, and the field of vision for light and bright objects but little impaired until atrophy sets in. The course of the neuritis usually coincides with the symptoms, and probably indicates the progress of the disease. If the neuritis be acute, and the tumor not influenced by treatment, it usually goes on to atrophy. If the morbid process can be influenced by treatment, the neuritis may subside, and normal vision be restored, and this may be the first indication that improvement is taking place. The cause of the neuritis is a disputed question. Extension of the pathological, irritative process to the optic tracts and nerves, distension of the sheath of the optic nerve, and lymphatics of the papilla, meningitis involving the nerve, and increase of intracranial pressure have been alluded to as causative factors. Optic atrophy when present is the result of a previous neuritis, and according to Gowers is never reached until after many months.

General convulsions occur in about 33 per cent. of cases. They are particularly liable to occur as an early symptom in child-

hood, and also may be the first manifestation in adults. They usually occur at long intervals, and indicate—

1. A rapid progress of the growth; or
2. Effusion into the ventricles; or
3. Hemorrhage within the tumor; or
4. Secondary involvement of the meninges.

They are epileptiform in character, but are rarely associated with epileptic automatism, or destructive mania. They vary in intensity from the petit mal to the grand mal type, but are usually severe, so much so that at times death supervenes during one. They may be preceded by aura when involving the special centers, or may begin as a local spasm, but these conditions have no special significance as a localizing factor.

Vomiting is present in about 50 per cent. of cases. It occurs without apparent cause, and may or may not be accompanied by nausea, or bear any relation to the taking of food. It occurs most frequently when the growth is cerebellar or basal. It is more common in children than adults. It is most frequent in the early morning, and when making attempts to move the head, and is often associated with headache and vertigo.

Vertigo may be a most constant symptom. It is usually independent of the act of vomiting, but may be associated with it. Things about the patient seem to be in motion, and at times the patient also. It occurs at intervals, and may be excited by change of position, with increase of blood pressure, or in the acme of cephalalgic exacerbations. It is rarely intense, except the growth lie in the posterior fossa, and is variable in duration. Mendall, of Berlin, states that true vertigo is always associated with disturbed musculature of the eyes, and is due to imperfect blood-supply to the nuclei of the nerves supplying the muscles.

Mental changes are almost a constant manifestation. They may be slight, merely a mild impairment of mental vigor, but their progress is marked by apathy and failure of memory, change of disposition, irritability, loss of self-control, loss of interest, loss of memory, delirious attacks, drowsiness, semiconscious states, coma and death. In a few cases there may be maniacal excite-

ment or melancholia or hallucinations and delusions. The cause is supposed to be due to the increased intracranial pressure, and compression of the brain.

Insomnia is usually due to the headache, and is more prominent in adults with a syphilitic history, due, it is said, to disturbance of the cerebral circulation, or to the intensity of the general symptoms. Occasionally there is somnolence instead of insomnia; it may be recurrent in character, lasting several days at a time.

Syncope occurs in a few cases, especially those involving the posterior fossa. In rare cases there is a distinct apoplexy, due to a hemorrhage within the growth.

The pulse is usually slow and irregular, supposed to be due to the increased intracranial pressure, and is regarded as an indication of such condition. It becomes very rapid toward the termination of the disease.

Respiration is often irregular, and of the Cheyne-Stokes character. It may become embarrassed by a growth in any part of the brain, due to the intracranial pressure, or to the direct involvement of the nerves of respiration, or their nuclei. The temperature may be normal, subnormal or increased, especially if there be any inflammatory changes.

Renal disturbances are as a rule associated with the increased intracranial pressure. There may be poluria, or glycosuria, due to pressure upon or irritation of the nuclei of the vagus nerves.

Nutrition is not much affected in sarcoma, but often is in syphilis, and emaciation is frequent in tuberculosis and carcinoma.

The deep reflexes are often increased on both sides, even when the growth is unilateral. Usually, however, they are greater on the side of the lesion. The exceptions to this are when the tumor is situated in the pons or medulla they are often absent. The superficial reflexes are variable and bear no definite relation to the deep, as they may be lessened or increased on the side of exaggerated reflexes.

The sphincters are usually not much affected unless there is great mental disturbances, profound stupor, or coma.

The focal manifestations depend upon the situation of the

growth, and may be produced, either directly from irritation or destruction of the part, or indirectly from interference with the blood supply. Tumors usually cause both. A slow growing, non-infiltrating growth may occur in any situation without producing symptoms until of large size. A single tumor rarely produces a large number of focal symptoms, and these are always unilateral unless it lie on or near the median line.

A predominance of the mental disturbances as an early manifestation points to an involvement of the frontal lobe. In tumors elsewhere they are usually a late manifestation, when the intracranial pressure becomes great. Disturbances of the power of balancing and staggering have been noticed, but are not constant, and are supposed to be due to involvement of the frontocerebellar fibers. The ataxic movements differ from those of cerebellar ataxia—

1. In being often associated with symptoms of general paresis.
2. In there often being localized tenderness over the frontal region.
3. In optic neuritis developing late in the disease.
4. In the mental symptoms being early in the disease.
5. In smell often being affected.

The vomiting is less constant, the headache less agonizing, and the choked disk not so frequent as when the growth is located elsewhere in the brain. It is impossible to tell from the mental symptoms which hemisphere is affected. Decided change of character, of disposition, mental apathy and tendency to somnolence must be regarded as local manifestations of frontal lobe involvement.

Convulsive seizures, paresis or paralysis of certain movements preceded or followed by numbness and tingling in the part affected, muscular inco-ordination, disturbance of muscular sense, point to an involvement of the sensorio-motor area. If these disturbances are limited to the movements of the face and phonation, it indicates a probable involvement of the brain substance surrounding the lower part of the fissure of Rolando; if they are limited to the upper extremity, it points to the middle third of

the fissure, and if the lower extremities are involved, it suggests an involvement of the upper part of the fissure. The spasms may be limited to one part, or assume the characters of a Jacksonian seizure. They are fairly uniform, and form the most reliable information for localizing purposes. They are usually followed by temporary paralysis, which becomes more pronounced as the tumor enlarges, while at the same time the convulsions become more frequent and severe. If the irritation be intense the local spasms may become general, may be associated with loss of consciousness, and terminate in general convulsions; yet a general convulsion beginning suddenly, with loss of consciousness, without local spasms, is said not to be indicative of an involvement of the motor area. When a tumor produces mere compression of the motor area there are no spasms as a rule, but a progressive paralysis.

Local sensory phenomena may precede or take the place of a spasm, and to a certain extent have the same localizing value, so that where the paralysis is associated with ataxia, marked incoordination, disturbance of muscular sense and anesthesia, it points to an involvement of the posterior portion of the sensorio-motor area. Contracture, fine tremors, movements becoming coarse and jerky, choreoid or athetoid may result from tumors involving the motor area, but have little localizing value.

Disturbance of muscular sense is said to point to an involvement of the supramarginal convolution.

Word blindness to an involvement of the angular gyrus.

Homonymous hemianopsia, paresthesia and partial anesthesia, to an involvement of the deep white matter of the parietal lobe.

Disturbances of sight point to an involvement of the occipital lobe, bilaterial homonymous hemianopsia resulting from an involvement of the cuneate convolution.

Disturbances of the sense of hearing point to the temporosphenoidal convolutions one and two.

Disturbances of the sense of taste and smell point to the apex of the uncinate gyrus.

A special form of sensory aphasia is often present in tumors

involving the temporosphenoidal lobe, characterized by an inability to recall the name of the object seen, or to recognize the name heard, and is said to be due to an invasion of the association fibers between the areas in which are located the memory of sight and sound.

Hemiplegia, hemianesthesia, including those of special senses, and hemianopsia, point to a lesion involving the internal capsule. Gowers says that hemianesthesia, including those of special sense, is one of the rarest effects of brain tumor, and is absolutely unknown from this cause, unless associated with some loss of power.

The assuming of forced positions, inco-ordination and awkwardness in making movements, loss of inhibitory control over the emotions, disturbance in the recognition of the limbs indicate an involvement of the optic thalmus.

A staggering drunken man's gait, nystagmus, paresis or paralysis of some of the ocular muscles, with the general manifestations of brain tumor, point to an involvement of the corpora quadrigemina. The ataxia differs from that due to cerebellar disease in that the ophthalmoplegia precedes these conditions.

Hemiplegia with crossed third nerve paralysis, without special sense involvement or hemianopsia, points to a lesion of the crus cerebri.

Hemiplegia involving the body and face on one side, and the third, fifth and sixth nerves on the opposite side, suggests a lesion of the upper half of the pons. If in addition to the third, fourth and sixth nerve the facial be involved on the side opposite to that of the body, the lesion is in the lower half of the pons. In most all pontine lesions the loss of the tendon reflexes are quite common.

Hemiplegia, hemianesthesia with symptoms of involvement of the ninth, tenth, eleventh and twelfth cranial nerves, involving articulation, phonation, deglutition, heart and respiration, projectile vomiting, polyuria, glycosuria and local vasomotor disturbances indicate a lesion of the medulla.

Early and severe headache, excessive vomiting and intense choked disk, staggering gait, with tendency to fall in certain

directions, and ataxia, point to cerebellar involvement. The manifestations appear earlier in the course of the disease in tumors of the cerebellum than elsewhere, because of the rigid tentorium. If the lateral lobe only be involved there may be no symptoms. The ataxia associated with the cerebellar disease is characterized by a staggering, reeling gait, with the feet widely separated, the steps of irregular length, and position, swaying of the body like a drunkard, accompanied by a sense of vertigo which disappears on lying down.

Since these manifestations of brain tumors are so variable and numerous, the question of diagnosis is rendered difficult accordingly. So closely do functional diseases of the brain simulate those of organic lesion that very few of these symptoms when taken by themselves can be positively asserted to be due to an organic disease. The following conditions are given as indicating the existence of an organic lesion:

1. Marked muscular atrophy in the distal part of a paralyzed limb of cerebral origin with flexor contracture, and increased deep reflexes.
2. Wasting of the muscles of the face with reaction of degenertion not due to an extracranial lesion.
3. Most cases of crossed paralysis.
4. Most cases of pronounced trophic disturbances of cerebral origin to one or both eyes.
5. More than transient hemianopsia.
6. More than transient sensory aphasia.

Having decided that the manifestations are due to an organic lesion, it becomes necessary to ascertain the nature of the onset of the manifestations, whether sudden, acute or chronic.

If the onset is sudden, one must differentiate between hemorrhage, embolism, thrombosis and brain tumor, for a brain tumor may be latent and sudden symptoms arise in the form of sudden paralysis, stupor, deepening coma and stertorous breathing, and in the absence of optic disk changes, and of a history, it is impossible to diagnose from those conditions.

Hemorrhage alone never causes optic neuritis. An apoplexy

with persistence, and increase of symptoms, appearance of headache, convulsions and optic neuritis indicates a tumor, probably glioma, with hemorrhage into it.

A sudden onset of symptoms, without any premonition associated with an organic lesion of the heart and convulsive seizures, is indicative of an embolus.

Gradual onset, with the presence of premonitory symptoms and a history of syphilis or alcohol, would indicate thrombosis.

If the onset be acute, practically only acute meningitis need be considered. This begins, as a rule, more acutely, runs a more rapid course, involves one or more cranial nerves, manifests bilateral symptoms, is attended with greater febrile disturbances, and less swelling of the optic disk. A tubercular affection, either as a nodule or a diffuse meningitis may be dormant until some exciting cause, such as a blow, or mental excitement lights it up, and then is liable to manifest symptoms of both tumor and meningitis. The longer the duration after one month, the more liable it is to be a tumor, although tubercular meningitis may run a course of six to eight months. Optic neuritis, followed by primary optic atrophy is common in prolonged meningitis, while choked disk followed by secondary optic atrophy is common in tumor.

If the course be a chronic one, and there are manifestations of tumor, it may be mistaken for—

1. Aneurism.
2. Chronic meningitis.
3. Chronic cerebritis.
4. Chronic hydrocephalus.
5. Brain abscess.
6. Brain syphilis.
7. General paresis.
8. Uremia.
9. Sclerosis.
10. Chronic anemia.
11. Epilepsy and other epileptoid conditions.

The only diagnostic sign of aneurism is the aneurismal bruit in the skull.

Chronic cerebritis is rare, but when present can not be diagnosed from brain tumor when the latter is not accompanied by focal symptoms.

Chronic hydrocephalus is characterized by being slower in development, having fewer symptoms of irritation, having bilateral manifestations, flexor spasms or spastic paralysis, affecting the legs more than the arms, inco-ordination of the hand movements, and no local spasms. One must not lose sight of the fact that this condition may be the result of a brain tumor, and not the primary affection. The fluid may displace the medulla, pons, or crura, and manifest cranial nerve involvement by stretching, so that it is often possible to diagnose only by noting the development of the symptoms.

Chronic meningitis is rare except the result of alcohol, syphilis or tubercle. A history of alcohol, slighter headache, impaired memory, mental dulness, delirium and primary optic atrophy would justify one in making a diagnosis of alcoholic meningitis. In tubercular meningitis the headache is more severe and continuous, there is more marked sensitiveness to light, sound and touch, the optic neuritis is less frequent, less intense and less rapid, there are tubercles on the choroid, and there may be a gradual subsiding of symptoms, but it must be remembered that there may be a localized meningitis resembling tumor, or a meningitis about the tumor, in which case diagnosis is practically impossible.

The symptoms of brain abscess are practically those of brain tumor, often differing, however, in their origin, mode of development, progress and termination. The presence of a cause, headache not so severe and less paroxysmal, mental change more sudden, and less constant, less swelling of the optic disk, less impairment of sight, faster onset of local symptoms and shorter duration, and situated in the frontal, occipital or temporosphenoidal lobes, are strongly indicatve of abscess. This condition may become latent and later recur with fatal termination.

Persistent headache, paroxysmal in character, slight failure of memory, unwonted slowness of speech, general lassitude, apathy and indifference, lack of will for mental exertion, aimless wan-

dering, restless nocturnal automatism, somnolence, momentary giddiness and vertigo in a syphilitic patient are alarming symptoms. Epileptiform convulsions following a history of intense protracted headache should excite a suspicion of syphilis (Pepper; Fournier). Epileptic attacks with hemiplegia or monoplegia, incomplete but progressive, when not due to alcohol or uremia, in a subject over 30 years of age, are due to syphilis in 90 per cent. of cases. Brain syphilis may develop within three months, but is usually a late manifestation.

Bilateral, jerky inco-ordination, absence of choked disk, absence of vomiting and scanty speech are suggestive of diffuse sclerosis.

The general appearance, high pulse tension, cardiac hypertrophy, albumin and casts in the urine, albuminuric retinitis, and less swelling of the optic disk, are characteristic of uremia. So closely do uremic symptoms resemble those of brain tumor at times that Bramwell makes the statement that one should never make a diagnosis of brain tumor without first excluding uremia.

General paresis manifests a gradual dementia rather than dulness, and is complicated by—

1. Stupid delusions, sometimes grandiose.
2. Motor symptoms, at first ataxic, later paretic.
3. Pupillary alterations or defects.
4. General tremors, causing speech and writing defects.
5. Diffuse sensory disturbances.
6. Supervention of a mania or melancholia.

In the early stage one usually meets with pupillary changes, tremor of the tongue, facial muscles and hands leading to speech and writing defects, mental alterations tending to eccentricity and vagueness, with paroxysmal exacerbations lasting several days or longer. If to these symptoms are added delusions of grandiose, content, absence of headache, vomiting and optic neuritis, the diagnosis of paresis is pretty certain.

The clinical manifestations of brain tumor are very similar to and not always differentiable from those constituting the symptom-complex of true idiopathic epilepsy. It does seem that there

should be some means whereby an epileptoid symptom-complex could be differentiated from that of a true epilepsy. Thus far, however, an inability to do so at times must be admitted, since one the one hand one often meets with cases which, during life, are regarded as true epilepsy and after death autopsy reveals the presence of some organic lesion, while on the other hand one also meets with cases regarded as epileptoid due to some gross lesion and operated upon as such, but operation and later autopsy fails to disclose the existence of such.

The diagnosis of epilepsy from the convulsions of organic brain disease presents many aspects and is of great importance. If the convulsions are general and unattended by any other symptoms the diagnosis is impossible (Loomis and Thompson). Epileptoid cases having every indication of genuine epilepsy on careful examination often show vestiges of old plegias, e. g., unilateral excess of reflex, traces of paresis, slight retardation of growth, a certain amount of rigidity, etc. Organic epilepsy tends to exhibit a unilateral character in its spasms.

Mistakes between epilepsy and brain tumor are most likely to occur in slow-growing tumors in or near the central convolutions. Convulsions almost always begin locally, but localization does not prove it. Presence of other symptoms are the most important indications. In the absence of these the etiological factors must be considered, e. g., a history of epileptic inheritance or of syphilis. Epilepsy is probable—

1. If convulsions existing alone are first on the one side, and then on the other.

2. By the length of time they exist as the only symptom.

Intense, persistent headache, permanent hemiplegic weakness, paralysis of cranial nerves, vomiting without cause, vertigo, dizziness, slow pulse, bilateral optic neuritis, mental disturbance lasting from one to two years, and convulsions are very strongly indicative of tumor. Convulsions of organic brain disease are—

1. Generally unilateral when slight, bilateral when severe.

2. Show a tendency to extend, becoming wholly general.

3. Induce a secondary state closely resembling that of epilepsy, leading to the occurrence of both minor and major attacks.

In attempting to arrive at a diagnosis one has to determine the presence, location and variety of the tumor, and to do this one must consider on the one hand the whole general symptom-complex, and on the other hand the local manifestations in the order of their appearance, method of development and extension.

The course of brain tumor is usually gradual and progressive, with an increase in the number and intensity of the symptoms. The average duration is about fifteen months, unless carried off by some intercurrent disease. Death is usually in coma or convulsions, and in a few cases they die suddenly with all the manifestations of an acute intracranial vascular lesion.

The treatment, with the exception of those of syphilitic origin, is practically surgical where this is possible. Those of syphilitic origin usually respond to antisyphilitic measures. Even in those that are not luetic, however, the administration of iodides often produces a temporary amelioration of symptoms, and is apt to lead one astray at times in arriving at a conclusion that the condition has a syphilitic basis. Where no benefit is derived following the administration of antisyphilitic treatment for a period of three months, a luetic basis may be excluded, and further treatment along that line is useless.

DISCUSSION.

Dr. A. E. Sterne, of Indianapolis: It is a very difficult matter to discuss papers when the really discussable portion is not read, so we may take up best of all the question of brain tumors from a surgical aspect. Naturally the question of a tumor in the brain is one which must depend entirely upon the symptoms presented in each case. I do not believe we can make a rule which we can adhere to in the matters of diagnosis in this region. It is a question in the first place and a pure guess as to what is the matter when we come to a disease of the brain or spinal cord for that matter, but the question that comes first of all is, "Where is the lesion located?" Then the question, "What is the nature of the lesion?" That is from a different diagnostic standpoint. Now the question of diagnosis as to the presence of a brain tumor de-

pends first upon some general symptoms which are present; second, upon some symptoms which are absent; and, third, upon some special symptoms which may be present or absent. By general symptoms, and into these we need not enter, we have such as those which may be gathered from the reports presented here which are, practically speaking, more or less general. You have certain mental symptoms in a vast percentage of cases, mental symptoms at some time either in one form of mental disease or another, but in others if the tumor is opened mental symptoms manifest themselves. We have symptoms of general pressure and cases of somnolence and complete coma in the later stages, very increased reflexes. They are the general symptoms which indicate pressure, but I must say in passing that sometimes we get very, very badly fooled, as those of you who are brain surgeons and operators may have experienced. I have had many a case where I thought I had a brain tumor without a question and localized absolutely, but when I went for it I did not find it there. The question of reflexes is one upon which we depend very largely, and they are usually but not infrequently blind tumors. They cause no change or scarcely any perceptible change upon either side of the body. Again, we find such tumors very small ones which we can hardly localize upon the matrix exaggeration of reflexes, but they make it worth while to warn us that they may not be present. We must locate the brain tumor from certain signs which are present. If the tumor lies in the frontal lobes it will give symptoms of mental change; if in the parietal lobes it will produce motor disturbance, and thereby also hangs a tale. Do not be too sure about the opposite side. I have operated in a number of cases where I had to operate on both sides before I found the tumor, and I found that the fibroids did not cross, and there I found the lesion for which I was searching. These kinds of cases are estimated at five per cent. Tumors behind the parietal lobes cause special sense disturbances, half vision, and usually affect the senses of smell and taste.

DIAGNOSIS OF PYLORIC STENOSIS.

BY EDWIN WALKER, M. D., OF EVANSVILLE, IND.

Accurate knowledge of the pathology, diagnosis and treatment of diseases of the stomach is of very recent origin. The last twenty-five years have contributed more real useful information than all the time preceding. It is true that Kussmaul gave us the stomach-tube in 1869, and in 1871 Leube pointed out its importance as a means of diagnosis and made some valuable contributions to our knowledge of the motility and secretions of the stomach. In the early eighties Ewald, Boaz and Riegal studied further the secretions of the stomach, and many other workers joined them, and gradually a fairly good knowledge of the chemistry of the gastric juices was formulated. But so many were the methods and so extensive was the literature, that the general practitioner found himself helpless in this mass of information. It has been difficult to get distinctly the essential points and contradictory statements have kept the profession from employing methods which were useful.

The surgeon came to our aid about the same time; before 1880 few operations had been done. During the five years following, Billroth, Czerny and Peau had proven that surgery was worth investigation, and from that time a large number of operations were done by many operators. The mortality of the reported cases was high and, doubtless, had all been reported, it would have been very much higher, but notwithstanding this real progress was made, not only in technique but in pathology as well. By the united efforts of the internist and surgeon, we are slowly clearing the way to a better understanding of the indications and limitations of surgical interference. Still at this time the conscientious practitioner finds great difficulty in discerning the truth, for the vast amount of literature is confusing, and it seems to me that indications laid

down by most surgeons are not altogether reliable or safe and are too often vague and unsatisfactory. For example, we are directed to make an exploratory incision in "chronic stomach troubles" which have resisted treatment for some months or years. Such directions are entirely too indefinite, for they would include many functional cases. I admit that an accurate diagnosis is not always possible, but it is so in a very large proportion of cases, the failure being rare exceptions. I think, too, that exploratory incisions have been given too much prominence; it sounds plausible and so easy to say, "If you can not find the exact condition, open the abdomen and see exactly what the trouble is." It must not be forgotten that it is difficult through the ordinary opening in the abdomen to fully explore all parts of the stomach, and ulcers and gross lesions are often overlooked. On the other hand, by careful study of the clinical history, supplemented by modern methods of physical examination, we will be able, in most cases, to accurately diagnose the condition, and in some of them better than we could by an exploratory incision.

I would say in chronic organic stomach diseases in which stenosis of the pylorus exists, or in cases of chronic ulcers which have resisted rational treatment, and also in cancer of the pylorus, where the patient is in fairly good condition, an exploratory incision is indicated. There probably would still be a few other chronic organic cases in which it would be justifiable, but there would not be many. This would leave a comparatively small number of cases which would require an exploratory incision, and I venture to predict that with the increased knowledge of diseases of the stomach, the indications for operative interference will be greatly curtailed and the number of operations much smaller, but the results, both as to mortality and benefit of the patient, will be better than at present.

Some authors speak of operations for ulcer in a way to leave the impression that it is indicated in a very large proportion of cases. While I know of no recent statistics on which to base a conclusion, from my own limited observations I think the per centum would be below ten. The older statistics of the cure of

ulcer by dietetic and medical treatment are not to be relied upon, more recent results being much more favorable.

Operations for cancer are far from satisfactory; resections are almost without exception a total failure, and conservative operations offer at best only temporary improvement, and few subjects live more than one year. Cancer of the lesser curvature represents 80 per cent. of all cases and surgery can do nothing for them. At the pyloric end, the condition is more favorable both as to early diagnosis and operation, but operations, so far, have done but little permanent good.

I wish, therefore, today to direct your attention to pyloric stenosis, for this is the condition in which an operation may do good. The benign ones furnish our most satisfactory cases and of the malignant ones, while far from promising, by early work we may be rewarded by a small measure of success.

We must first determine that stenosis of the pylorus exists, then the lesion which causes it.

Let us briefly enumerate the causes. We have temporary stenosis from inflammatory swelling in acute gastritis; this is usually easily determined from the symptoms and the transitory character, and need not concern us at this time. A foreign body may become lodged in the pylorus. The latter will normally allow a silver dollar to pass (Cohnheim). Collections of hair and gall-stones as well as polypus of the stomach have also caused obstruction. An ulcer with thickened walls often causes stenosis; in some of these cases a tumor is distinctly palpable. Smaller ulcers, by inducing spasms of the pylorus, may also cause stenosis, likewise a cicatrix of a healed ulcer. The latter contracts, gradually narrowing the orifice, and often years pass before symptoms indicate the condition. A tumor external to the stomach and adhesions may compress and thus narrow or occlude the pylorus. Also, in gastroptosis, acute kinking of the stomach and the duodenum may also cause stenosis. These are the causes in the benign cases, and the malignant ones are, with rare exceptions, carcinoma. Ulcer of the cicatrix following, and carcinoma, are the causes in almost all cases.

Now, how are we to diagnose stenosis? This depends on the establishment of two conditions, stagnation and gastrectasia. By stagnation we mean that the stomach does not empty itself in seven or eight hours. Much has been written about atony as a cause of stagnation and I am not prepared to say it does not do so in rare cases, but I do not say that when you find stagnation, in almost all cases, you have a stenosis of the pylorus. If, therefore, you find in the stomach in the morning food which was taken the evening before, you are practically certain that there is an obstruction at the pylorus.

If, in addition to this, you find the stomach dilated, the diagnosis of stenosis is complete. Let me here direct your attention to a few points too often overlooked. If you find the greater curvature below the umbilicus, it does not follow that you have dilitation; it may mean that the normal position of the stomach is more nearly vertical. This is true in those who have the "habitus enteroptoticus," first pointed out by Stillen. Thus he used to designate those individuals who had an acute costal angle and the distance from the umbilicus to the ensiform cartilage was greater than from the middle line to the anterior axillary line, and also a floating tenth rib. Such individuals are usually undernourished and are prone to displacement of viscera, including stomach, liver, kidney and uterus, and they, as a rule, suffer from functional diseases. On the other hand, those who have the normal habitus, viz., a broad costal angle, the distance from the umbilicus to the ensiform is less than the distance from the middle line to the anterior axillary line, seldom suffer with functional diseases, but are the victims of organic diseases. If, therefore, you find the greater curvature below the umbilicus, and the patient presents the "habitus enteroptoticus," the probability is that gastrectasia does not exist. In fact, we can not say a patient has dilitation until we demonstrate that stagnation exists. The stomach is like the heart—when there is obstruction to the outflow, the muscular wall hypertrophies and furnishes the necessary force to empty the organ, and when the obstruction becomes so great that the power of the muscle is insufficient, the organ dilates. The stomach, like

the heart, dilates when muscular insufficiency exists. So long, then, as the stomach is able to overcome the obstruction neither gastrectasia nor stagnation are found, even if the pylorus is narrowed.

In these cases, if the passage of food through the pylorus is markedly compromised, the quantity of urine decreases, and when the total quantity for twenty-four hours falls below 500 cc. (one pint), and this is not increased by proper diet, it is an indication that operative interference offers the only hope of relief. (Conheim.)

When we have established the existence of pyloric stenosis we must determine whether the lesion causing it is benign or malignant. This is done in part by the history, but more surely by the examination of the secretions. Benign cases are of longer duration, do not so markedly affect the general health, and while great emaciation may exist, there is no cachexia. The benign cases also usually give history of ulcer, or some acute inflammatory disease or of some lesion outside of the stomach. The malignant cases are attended by more rapid emaciation, cachexia, pain, vomiting of blood and mucus, and the development of tumor. The secretions, however, give us very reliable information, and while not pathognomonic, is nearly so.

If stenosis exists and there is an excess of hydrochloric acid, free and combined, the case is benign; if it is diminished or absent, it is malignant. A carcinomatous ulcer at the pylorus is an exception to this rule and I have seen two cases in which the excess of hydrochloric acid persisted to the end; but these are comparatively rare exceptions. Still more rare is a benign obstruction developing in a patient who has chronic unacid gastritis with atrophy of glands, in which the hydrochloric acid is diminished. These exceptions should not divert you from the fact that the rule given above is true in probably ninety-eight to ninety-nine per cent. of all cases.

Let me briefly report a case to illustrate the mode of procedure: The patient in question was a lady, 55 years of age; she was married and had two children, family history was good and her own

health had been excellent, excepting at her fifteenth year she had some trouble with her stomach, which was attended with daily pain and occasional vomiting. This continued about one year, after which she fully recovered and had no illness of any character until the present trouble. Three years ago she noticed that she would occasionally become bloated and there was rumbling in the bowels, and fourteen months ago she began to vomit. The vomiting would recur almost daily, sometimes once and occasionally two or three times daily, usually four or five hours after meals, and the quantity ejected was generally large. About this time she began to use lavage, which was continued for one year, giving her temporary relief. The vomitus often contained food taken the day before, and the quantity sometimes was as much as a gallon. She had never vomited blood and never had any severe pain; her bowels were generally constipated. Her normal weight was 206 pounds, and at the time she applied for treatment she weighed just 100 pounds. On physical examination I noted first that she had a normal habitus, the abdominal wall was flaccid and through it the dilated stomach and the peristaltic wave could be distinctly seen, the greater curvature was four finger-breadths below the umbilicus.

The contents of the stomach was 120 ounces and was removed eight hours after taking food. In this the free acid was 50 and the total acidity was 120. I then washed out her stomach thoroughly and that evening had her eat a few raisins; the next morning gave her a test breakfast (2 oz. of bread with 4-5 pt. of water) and an hour afterward removed the specimen for examination. The raisins were found and the stomach contents yielded a free acidity of 40, total acidity of 90 and the rennin test was 50 per cent. above normal. At that time she declined any operative interference and I put her on a stenosis diet; that is, a diet in which the articles are soft and fluid; under this diet she gained in flesh and strength for a short time, but soon grew worse, lost weight and finally decided to submit to an operation.

In this case you will note that in the first place she had stagnation, for we found the articles from the day before. She had gas-

trectasia, which was easily discerned by inspection and palpation. We know also there was insufficiency because of the stagnation, and know, too, from the fact that the total acidity was above normal that the disease was not carcinoma. I did a pylorectomy after the method of Kocher. She made a full and complete recovery and since that time has been entirely well.

My object in writing this paper is to bring distinctly to your mind the symptoms which will enable you to make the diagnosis of pyloric stenosis and also to differentiate the malignant and benign, and not to enter to discuss the technique of the operation.

DISCUSSION.

Dr. Buchman, of Fort Wayne: I feel somewhat ill at ease in attempting to discuss a paper in the surgical section, for I am not in the habit of visiting this section very much; but the paper interests me for various reasons, and first is, that it makes a statement that stomach surgery has not been as successful as we had hoped it could be, and we have frequently benign conditions in which the pyloric opening is stenosed. I am one of those who believe that a dilated stomach is not a fatal condition. I believe that if the stomach of a patient is properly cared for that the muscles will gain a certain amount of their life function and serve the patient very well, just as well perhaps, or better, than a gastro-enterostomized stomach. Under some conditions, however, which in this paper have not been mentioned, I have not infrequently come across those which present paralysis of the pyloric opening, which can be very easily mistaken for a mechanical obstruction and which is amenable to treatment and cured in very many of these cases, for they are often easily cured with time and care. The question always arises in these cases, "What will we do with them?" The first thing to do is to bind the stomach so as to pull it into place; then feed the patient concentrated food, that is, feed him food that requires as little digestion as possible and which contains the greatest amount of nourishment. Watch very carefully a number of hours after eating and see that there is nothing left in the stomach. When this is done often the possibility of a

dangerous operation is not necessary. Now, how to distinguish these cases from malignant ones is a question I will give you. I am not able to go into the early history of the cases. I have had cases that I was quite certain for a given length of time were benign, and then again I would think for a time that they were malignant, and you want to know what they are at a time when you can give them relief, so we want to know how to differentiate these cases. I have had an enormous amount of experience, and yet once in a while I get taken up, and I find when I am looking over statistics of surgical reports where cases have been diagnosed by cutting down and making incisions to see what was the matter, that these surgeons did not diagnose them before they operated any more than you or me or anyone else did.

Dr. Maurice I. Rosenthal, of Fort Wayne: There is a reason for stomach operations becoming so popular. I know of nothing that gives such immediate relief as gastroenterostomy for stomach disturbances. It is true that our results in malignant cases have been anything but satisfactory; malignant diseases of the stomach belong to benign cancer, understand; they are all malignant, but some are more than others, and in some regions cancers may be called benign. They are slow of growth, and for that reason a cancer of the stomach develops slowly and the patient has a chronic affection over a long period of time, and they are often told that they have dyspepsia, but after while they come to a surgeon. The conservative operations seem to bring the best results, and the reason for this is that we see these cases rather late, and if we should do otherwise and cut into the tissues we would disseminate this growth which has been more or less benign through the field of the operation. We know that carcinoma is infectious and that the elements which produce a cancer can be disseminated through the field of the operation in your manipulation.

About two weeks ago a man was brought into the hospital who was in a very reduced and starved condition and I operated on him; he was fed food through a tube. This man required morphine at all times on account of the pain he suffered, and he vomited everything he ate, and he gave a history of having vom-

ited everything he had taken for two or three days before. We opened the abdomen and made an incision about two or three inches long. A week ago I presented him to a medical society and he had only been out of bed two or three days. He left the hospital last Friday and the nurses told me that he was eating like a farm hand. I have seen such cases of a rather advanced carcinoma go on for sixteen, or eighteen or twenty months with apparent relief. Certainly that is the best this individual could expect. I have had a number of such experiences. A pyloric spasm which continues for a sufficient length of time brings serious disturbance which I have relieved by gastroenterostomy, but this should not be resorted to in malignant cases. Ulcers of the stomach very frequently, in fact in a large per cent. of stomachs, are at the seat of the trouble, so when a gastric ulcer resists treatment for a length of time, where the trouble is sufficient to endanger the life of the patient, they should be gastro-enterostomized. I do this from the posterior. This should be done near the duodenum, for you have a given distance from the opening in the stomach to the common duct and the danger of peptic ulcers becomes greater.

So far as our assistance from chemists is concerned they have been more of a disappointment than our operations for cancer. The chemist makes an examination for residual food if the stenosis is sufficient to make a chemical examination; this residual food makes acid. I have had very little assistance from the chemist. We do not dare put a tube in some of the stomachs because the patients have been having hemorrhages from their ulcers. I have had very little assistance from the chemist.

Dr. A. B. Graham, of Indianapolis: Good work in the diagnosis and treatment of diseases of the stomach demands the hearty co-operation of both physician and surgeon. It is absolutely essential that every physician make use of all the well-known methods of examination at his command, if he expects to make anything approaching a correct diagnosis of a disease of the stomach. Further, it is absolutely essential that gastric surgery be performed by a competent surgeon. If good work be performed by the physician; if a test meal be given in every case of suspected stomach

disease, the same aspirated or expressed, and subjected to a careful chemical and microscopical examination, then the surgeon will not be in a position to state that the chemistry of digestion has been a disappointment to him. I am somewhat surprised to hear my friend from Ft. Wayne state that chemistry has been more of a disappointment to him than his operations for cancer. The fact must not be overlooked that physicians who are giving the subject —diseases of the stomach—much study, do not state that they can make a positive and correct diagnosis in every case. In fact they fail in not a few cases.

An early positive diagnosis should be attempted in every case of stomach disease. If a malignant growth is diagnosed, then the case should be referred to a competent surgeon, and a radical operation should be performed. A gastroenterostomy relieves but fails to effect a cure in these cases. With good work on the part of both physician and surgeon, I predict the operation will be less frequently performed.

When we reach that point where the physician and surgeon co-operate in the work of diagnosing and treating diseases of the stomach, then will our mortality statistics be reduced. This means good, honest work on the part of both physician and surgeon. It means a careful examination of our patient, employing every method available. It means rational therapeusis. If our patient does not yield to rational therapeusis within a few weeks, but on the contrary gradually loses ground, then said patient should be referred, without delay, to a competent surgeon. Such work on the part of the physician means better work on the part of the surgeon. Better work on the part of the physician and surgeon means better results in the treatment of diseases of the stomach.

In conclusion, I wish to state that I have never been able to diagnose positively a pyloric spasm.

Dr. Geo. W. McCasky, of Fort Wayne: I wish to take a little exception to the position of one of the doctors as I understood him, with reference to the diagnosis of food which had stagnated. I have seen authorities somewhere that say that it could be present from other causes. I wish to go farther and explain from my own

experience and I will say that food stagnation is present in a large number of cases without a sufficient array of symptoms to justify a diagnosis of stenosis, but in cases where the subsequent history proved positively stenosis was not present. What is the condition? The gastric muscles become weak, become unable to perform their work, and after awhile the food particles are allowed to remain there; it does not keep up the parestaltic action until every particle of food has been forced out into the duodenum. I read an article not long ago, published by a surgeon, I think, although I will not say positively, in which it stated that after possibly twelve hours' time if there was any food in the stomach it was a cause for operation. I think he was wrong, for I have seen cases of food stagnation disappear under proper treatment again and again, so that in my own opinion, based on quite a little experience, in a large number of cases I do not think this indicates pyloric stenosis. I think before we operate we should place the patient on a proper treatment; we should give them gastric massage, and electrical treatments, and various things that can be done, or at any rate endeavor by such means as are at our command to overcome this state of the gastric muscle and in many cases you will overcome stagnation. I do believe this, however, that if we are going to make an operation we should make a radical one. I do not know whether I understood Dr. Rosenthal correctly or not; if he means to say that the operation of choice is the gastroenterostomy, I am not in accord with him. I believe in every case we should operate for more than to relieve the symptoms. This may be the proper line of procedure if we can get the case early enough, which is a very difficult problem—if we can make our diagnosis early enough to have an operation which is radical in character, I do not think it is to be scoffed at. Cancer is a local disease and we should have the case as early as possible.

Dr. Rosenthal, of Fort Wayne: I do not wish to take up your time, but I have been listening to the discussions with a great deal of interest. I know, and I think most everyone present knows, that by statistics on a theory you can prove almost anything. Mr. President, I am sorry I had to live through a time when I did not

have positive proof, as I do now, that gastroenterostomies, or whatever other abdominal operations, are performed successfully; I do know that for a great many patients I have had to stand there like other friends here, and see my friends die, when I did know positively that some, and possibly a large majority could be cured by just such an operation as this. When we can perform this operation and let them live free from pain and die like human beings, why not do it? These are facts, and theory will not controvert facts. It seems to me when we can relieve suffering, as we can in these cases, that ought to be enough. (Applause.)

Dr. Moses Thorner, of Indianapolis: It may be true that in some of these cases we have overstepped our bounds in our overzealousness; in fact in a number of cases I think this is so, but when one sees a case like the one I have in mind, a woman who had suffered for years, and had been treated by many physicians, wasting away, coming before you almost a corpse, operated on, the stomach found to be thick—in a state of extreme thickening—the stomach dilated to an enormous extent, the pyloric opening being almost closed, and would open only to the extent of the size of a slate pencil, and you see that from an operation of gastroenterostomy the patient gets well and strong—in a year the patient is well and strong—and there must be many other cases of that kind which can be so relieved, don't you think you would have a more favorable impression of it?

Chairman Stevenson: If no other member wishes to discuss this paper Dr. Walker may close it.

Dr. Walker, closing: I did not write this article with any purpose of disclaiming stomach surgery. I believe there is a more excellent future for stomach surgery than in the past, but we must do it as we do other departments of surgery, along accurate scientific lines. If we operate on a patient when it is not necessary it is a failure no matter how skillfully done; if we study these cases and operate only on the ones that should be operated on then we will have excellent results. The earlier we get these cases the better we can attend to them.

I should like to say that I do not thoroughly understand Dr. McCaskey, but I hardly think that I agree with him at all. Now, when there is food present in the morning, I do not mean if you have paresis, or spasm, or anything of that kind, but we have cases of gastritis quite frequently that disappear on a proper diet. I think that the cases of the stomach that Dr. McCaskey spoke of are very rare. I say this in order to be respectful to my confreres, although I have never seen a case, and I have seen the conclusions of several specialists on these lines and they say that they have never seen a case, and with all respect to his diagnostic ability I will say that such a case may occur, but I have never seen one. As I said in the beginning I think there is an excellent future for stomach surgery, but not as long as we do reckless cutting, as I fear we are doing today.

PUERPERAL SEPTICEMIA.

JOHN B. FATTIC, M. D., ANDERSON, IND.

Childbed fever, puerperal fever, puerperal blood-poisoning, puerperal septicemia, or better termed puerperal infection, starts from wound infection caused by the absorption of poison produced by the action of microbes of decomposition in the wounded genital tract. This infection varies from a mild local disorder in the external genital tissues to a serious uterine affection or even a critical invasion of the general system. Puerperal fever is not specific in the way that typhoid or scarlet fever is, as was formerly believed; the term has no right in scientific language, since some of the severest cases show no fever.

Puerperal infection is an important disease. Numerous so-called epidemics have occurred in the past of appalling intensity. This was before the use of antiseptics. Its mortality runs from 1 to 11 per cent. or more. Since the use of antisepsis began the death rate has fallen fully 25 per cent. Puerperal infection is the most fatal disease, excepting tuberculosis, that occurs in women during the child-bearing period. We are told that in women between 25 and 35 years of age, when most children are born, one death in every six is due to puerperal infection.

Most bacteriologists say that the female genital tract is asceptic in health and that its secretions are harmless, and also have germicidal powers. For this reason it is asserted that vaginal douches before labor should not be given in the healthy subject.

A woman never begins labor in a strictly ideal condition, because with her the line between the physiological and the pathological is not perfect. Right here is the text of the sermon, i.e., prophylaxis. Armed expectancy, as some one has said, should be the rule and the attitude of the physician during the puerperal state. Wound infection is the beginning of the change from the physiological state to the pathological.

Whence comes the infection? Three sources are mentioned—the air, the patient's body (so-called auto-infection) and material of an infectious nature or capable of causing infection, brought into contact with the patient's genital organs, and including the mammary glands. The first two of these theories are worthy of places on oblivion's shelf as relics of past erroneous teaching. Some still believe the infection may come through the air, but the great majority admit that this is for short distances only or in badly ventilated rooms with other patients, and that epidemics can be traced to an individual carrier or to the neighborhood of a focus from which the disease spreads.

A woman delivered and cared for aseptically may lie in an infected room, whether near erysipelas, measles, scarlet fever, etc., and she may be free from septicemia. She may contract either of these infectious diseases, but they will run their usual course, only modifying the puerperal state by interfering with involution. If she dies the lesions peculiar to the intercurrent disease may be found, but nothing suggestive of septicemia. On the other hand, if the erysipelas or scarlet fever infection material be carried into direct contact with the wounded genitals, then septicemia may follow, perhaps modified by the development of the infectious disease transmitted. If she dies the lesions due to infection by septicemia will be found in addition to those characteristic of the intercurrent disease.

The theory of autoinfection, where the poison originates within the patient's body, as a cause of puerperal septicemia, is not accepted today, because spontaneous generation of disease is not possible, and the recognized causative agents of disease are never found in the healthy body. The nearest approach to autoinfection is in sapremia.

Septicemia is due to a few species of microbes, chiefly streptococcus pyogenes, identical with those found in wound diseases, also bacterium coli, the gonococcus, the bacillus diphtheriae and perhaps others, which gain entrance into the tissues through breaks in the epithelium, causing necrosis by their growth or poisonous effects by their ptomains, or, in cases of inhibited excretion, leucomains.

The infection starts usually in the endometrium, where is early developed a layer of granulation tissue filled with leucocytes, our newly discovered friends, once thought our enemies, which give valiant battle against the microbes, eventually engulfing and absorbing them, if not outnumbered. For this they are called "phagocytes," that is, "devouring cells," a sort of giant-killers in miniature.

The necrobiotic layer may be covered with all kinds of bacilli and cocci, but they never enter it, and this determines the local form of infection. If, however, the microbes gain entrance into the patient's tissues then occurs the general sepsis.

In septic peritonitis the infection is not propagated through the fallopian tubes, but through the lymphatics of the uterine walls; therefore injuries of the cervix afford a ready entrance for the infection.

The open veins under the placental site are plugged with thrombi, which give excellent entertainment to germ colonies and consequent rapid general invasion. The diphtheritic form of infection begins in the mucous membrane of the vulva, the vagina or the uterus, or in a tear, and patches, like those in a diphtheria throat are formed. It may be a vicious attack from the usual streptococcus or from the true bacillus of diphtheria.

The difference in symptoms and severity in different cases is accounted for in several ways. The varying power of resistance may decide the contest, one organism succumbing in an attack which a stronger one successfully resists. The mere number of microbes determines very much in all infections; each body is capable of resisting a certain number, but may lose in the battle with an overwhelming lot. Anatomical structure, connections and relations of the involved part may provide defense or easy ingress. Infection germs entering one lymph-vessel may be carried direct to a vigorous gland and be overcome there, yet another vessel or more might carry direct to the peritoneum, or pericardium, or pleura or elsewhere, or a thrombus in a vein may break down and the debris go with the blood-current to lodge in the lungs, starting an abscess which could supply microbes for new foci.

Most important of all seem to be the different degrees of virulence of the microbes themselves. Virulence is a property which occurs in explosive proliferation and energy in resisting phagocytesis. This virulence is diminished by artificial culture, but increased in the animal tissues.

Infection usually occurs during labor, but it may be before and after. As a rule about 36 hours after delivery the first symptoms appear. The initiating chill does not always become prominent, except in fulminant attacks where the patient rapidly passes from health into death. This chill, sometimes unnoticed, has the same significance as when it ushers in any acute infection. If it is followed by a constant fever in the puerperal state, infection is to be suspected. The pulse affords a more valuable aid to diagnosis and to prognosis in these cases. A slow pulse is said to be incompatible with sepsis in its early stage. A rapid pulse is a danger signal. Either hemorrhage is impending or sepsis is at hand. Danger from hemorrhage is usually over 36 hours after delivery, if the uterus remains contracted. If the pulse steadily increases in frequency and the temperature is above 100 degrees (Fah.) about the third day, sepsis may be suspected. This has been ascribed to the oncoming of the milk—milk fever—but we now know that the establishment of lactation causes no constitutional disturbance in healthy women. Neglected bowel evacuation frequently causes some constitutional derangement about the third day, but a laxative should correct the trouble. In case it does not, then, if no intercurrent disease is approaching, sepsis is. A rigid examination of the patient's genital organs is necessary at once. If the pelvic floor is torn, sloughing may be present, or so-called diphtheritic infection is beginning. Next, the cervix is to be examined through a speculum, then the body of the uterus is questioned and, incidentally, the bladder for cystitis. All this is done to locate the trouble, while it may be amenable to local treatment, or at least before systemic infection has progressed far.

Septicemia may be said to begin oftenest in the uterus. Its lymphatics have absorbed the septic virus direct or a decomposing mass is retained in its cavity and becomes infected. Salpingitis

and peritonitis may quickly appear, or sapremia may occur (a poisoning from absorption of decomposed products), ending in septicemia with all of its attendant features.

As stated, the relation between the pulse and temperature in the puerperal state is of great value from a prognostic as well as a diagnostic standpoint. Acute septic conditions, where the system is surcharged with the poison, are accompanied with marked rapidity of the pulse and very low temperature. The system is deeply shocked by the poison; a condition of collapse ensues; temperature 100, pulse 120-140, a scene of the most gloomy prospect. Again, where the lesion is of the acute inflammatory kind and the system infection is light there is high temperature but relatively low pulse. The most virulent of all types of puerperal septicemia, general purulent peritonitis, is usually associated with low temperature and high pulse rate, and often, also, with flat instead of tympanitic abdomen. In short, in the puerperal state the pulse furnishes a more reliable prognostic guide than does the temperature.

As the symptoms increase the lochial discharge is altered. It may be arrested or become very foul. The stoppage may be only apparent from stenosis of the cervical canal with consequent retention and stagnation, or there may be real retention from suppressed excretion, the associate of systemic infection. If from mere retention the constitutional disturbance abates on restoring the drainage. Fetor may be absent in the most acute sepsis. In early stage of sepsis pain is usually absent. As a rule it becomes marked as the peritoneum becomes affected. A systemic infection deepens, the uterus becomes tender, each organ is painful as infection reaches it; a sharp pain from septic pleurisy, in the leg from thrombosis and phlebitis. In pelvic exudate the pain is sharp and radiating. When there is purulent peritonitis or sudden escape of pus into the peritoneal cavity, if associated with general septicemia, pain may not be present, according to the statements of some authors.

The digestive tract is greatly disturbed in septicemia and the trouble will increase if the intestines are inactive. Tympany,

nausea, vomiting and consequent dyspnea are increased by constipation. A sallow skin, sweet breath, typhoid brain, perhaps delirium, insanity or even mania are to be added to the list of symptoms. Scarcely an organ in the whole body may escape the ravages of sepsis, and if the poor victim lives it is rare for her to regain average health.

The incubation period is one, two or three days, during which time no warning sign may show. Sometimes the patient is restless, in pain, has nausea, increased pulse or other minor symptoms. But all this may have nothing to do with the coming storm.

Gilliam's description is classic: "In an ordinary typical case the patient has experienced the usual amount of pain, restlessness and vomiting while the incubating has proceeded in the pelvis, until suddenly a million microbes burst into the peritoneal cavity. The onslaught is so furious and fierce, so vast and terrible as to carry everything before it. Confusion reigns; physiologic functions are upset; the stomach expels its contents upwards, the intestines stand still, and the pulse runs riot. It is small, quick, sharp, and strikes the finger like a vibrating wire. She vomits clear water, then mucus, then bile, then brown fluid. She is very restless, tosses from side to side, frequently sighing. She is apprehensive, then panicky and finally lapses into hopeless despair. From the first she shows that the hand of death is over her. Her face becomes anxious and drawn. Her eyes are sunken and blaze with an unnatural light. They fix upon you with eager, anxious questioning, or roll with furtive and frightened glances. She presents a pitiable picture of one that is hunted; a picture that, once seen, will persistently haunt you. The temperature goes up but has no fixed relation to the pulse. The abdomen is much distended and tympanitic; neither fecal matter nor flatus passes from the bowels. The pulse becomes so thin and rapid it is a mere running thread; the skin is cold and clammy; breathing is irregular and shallow. Two days of silent preparation, two days of tumult give the battle to the germs and on the night of the fourth day the victim goes to rest."

There is another form of sepsis as irresistible and as unerringly fatal, in which there is no abdominal distention, no peritonitis but in other respects is like the other form. This may be fulminant in character, causing death in a few hours, but usually is slower and runs its course in a week or ten days. There is dull, heavy pain in the extremities and elsewhere, chills, profuse sweats, the temperature zigzags to extremes; colliquative diarrhea sets in; nervous apprehension may be absent and the patient placid and hopeful to the end.

Let it be faithfully remembered that a gradually ascending pulse associated with vomiting, declaring on or about the second day after delivery, are ominous of evil and strongly suggestive of sepsis.

Puerperal infection being a bacterial disease, its treatment, preventive as well as curative, must be germicidal. Asepsis and antisepsis are the watchwords in the battle against it. It is an interesting historical fact that the great discoveries which form the basis of all antiseptic surgery were made by obstetricians long before they were independently made by surgeons. The father of antiseptic midwifery was Semmelweis of Vienna, who in 1847 understood that so-called puerperal fever was due to infection and who used chlorin, one of the best germicides, in the shape of chlorinated lime as a disinfectant. But this great discovery remained an uncut diamond, lying despised in a corner for a whole generation, the discoverer dying in a madhouse. Lister applied the discoveries of Pasteur to surgery in 1866. Stadfeldt, a Dane, and the Swiss obstetrician, Bischoff, in 1870 introduced carbolic acid in midwifery. Tarnier, a Frenchman, in 1881 mentioned bichloride of mercury as a remedy for puerperal infection, then Koch's investigations were followed by Schede's introducing it in surgery. Not the drug but improved disinfection has brought results. From 1875 to 1883 the mortality in the New York Maternity Hospital from puerperal infection was 4.17 per cent; from 1884 to recent years it has not exceeded 0.18 per cent.

Digital vaginal examinations are condemned by many, and justly so if the fingers are dirty, but by careful disinfection with

chloride of lime solution, after soap and water five minutes, then wearing boiled rubber gloves, the danger of such infection is exceedingly small. Absolute cleanliness, pure air, sunshine, patients kept separate, patient surgically clean, disinfection of everything coming into contact with the patient form an ideal and a practical standard. Especial caution is urged in delivering the placenta. Crede's expression method should be used and no finger put into the vagina if it is possible to avoid it.

The membranes also should be carefully and completely removed. If they can not be brought away at first it is well to tie a sterile string to them for removal by traction later. Intrauterine injections are used if fingers, hands or instruments are introduced—1 per cent. creolin or lysol solution through a glass tube over a douche pan, with antiseptic care. Repeated vaginal and uterine injections, after one thorough cleansing are voted harmful by best authorities, probably because of the danger of carrying up some infection from below. Serum subcutaneous injections seem to be of limited utility because of the prevalence of mixed infections. Operative measures have been found useless unless directed to local conditions. Curetage and other local measures may disinfect the uterus in some cases of streptococcic infection and hysterectomy may save life in severe local cases. Some authorities insist on bacteriologic examination of all cases where possible, and if the vagina or uterus contain pathologic germs they should be treated. For the worst form of puerperal infection, that of general peritonitis, there is virtually but one termination—death. Isolated cases of recovery are reported now and then, but even these are open to the suspicion of mistaken diagnosis. The treatment is, consequently, purely symptomatic, making the patient as comfortable as possible. The indications are to control vomiting, relieve abdominal distention, quiet pain and sustain the bodily powers heroically. Owing to absence of absorption and paralysis of the intestinal tract in many cases, medicines given by mouth are practically useless. Free bowel action is of great benefit. Strong solution of salts with glycerine carried well up into the colon often serve well. Gastric lavage

is said to be of great value. Rectal tube for flatus is of limited value. Strychnine, 1-30th grain doses hypodermatically, sustains the heart. Alcohol is recommended if absorption can be had. After the case becomes clearly hopeless, opium is the best friend to the sufferer in her last hours.

The latest review of the treatment of puerperal infection, given by Rosthorn, is that intravenous infusion of a solution of formol has been discarded on account of its dangers, demonstrated on animals. Some are convinced that intravenous injection of the silver salts is perfectly harmless, with good technic, but that their action is unreliable. Their external application in the form of absorbable ointments have advocates. They probably act by their chemotactic inhibiting influence on the germs, but it is known that enormous quantities of leucocytes are sacrificed in the struggle. If the blood-forming organs are unequal to the task, then the drug fails to cure. There is also some possibility of electro-catalytic action. On account of its harmlessness and our helplessness generally, the method should be given a fair trial and not be dropped too quickly. The reason why serum treatment fails so completely in one case and succeeds so brilliantly in an entirely similar case is a matter for further research. Tavel suggests that there may be a lack of cytosis or leucocytes in the negative cases, and that it may be possible to supply the missing elements when we learn which they are.

EARLY OPERATION FOR UTERINE FIBROIDS.

CHARLES STOLTZ, M. D., OF SOUTH BEND.

The proper time to operate on the fibroid uterus has been a moot question in gynecology for half a century. Burnham, of Lowell, Massachusetts, in 1853, performed the first successful operation, by laparotomy, for these growths. The same year Atlee, of Philadelphia, sounded the keynote of aggressive action in a paper before the American Medical Association entitled, "The Surgical Treatment of Certain Fibrous Tumors of the Uterus Heretofore Considered Beyond the Resources of Art."

These bold leaders set the pace for the surgeons of two continents; but the battle of opposition to radical measures has never ceased, even to this day.

Thirty years ago the late William Goodell in his classical "Lessons on Gynecology," wrote: "There is no cut-and-dried method of dealing with uterine fibroids. * * * Their treatment is essentially a combat with symptoms. However," he adds somewhat timidly, "the need for hysterectomy will occasionally arise in cases of malignant growths of fibro-cystic tumors of the womb, or in cases of rapidly growing or of otherwise hurtful uterine growths, in which the ovaries can not be safely removed."

To stay the hemorrhage was at that time thought to be the most imperative indication for their management, or for their removal.

A decade later T. Galliard Thomas taught that while an ovarian tumor should always be removed as soon as recognized, on the general principle that it will infallibly sooner or later endanger the life of the patient, yet he would not apply the same rule to uterine fibroids. He said: "So long as they do not affect the life or health of their possessor, either by producing dangerous hemorrhage or by interfering with the comfort or nutrition of the woman through rapid growth and pressure upon vital organs, they

need not, necessarily, be interfered with, since in themselves they are not likely to prove fatal. But when a large subperitioneal or interstitial fibroid tumor shows, by its rapid growth in a comparatively short time, that it will sooner or later interfere most decidedly with the well-being of the patient, or if its size already so interferes, or if by its situation it happens to cause much pain or to obstruct the circulation in some of the abdominal viscera or in the lower extremities the indication may arise for the only absolutely sure treatment of removing the growth."

In the next decade the Apostoli method of the reduction of fibroids by electricity occupied the attention of gynecologists, and did much to retard the progress of radical and rational treatment.

At the present time opinions as to speedy relief for the woman suffering from a myomatous uterus are by no means unmixed. In his latest edition of "The Operations of Surgery," Jacobson says: "A fibroid tumor of the uterus does not afford a sufficient indication for operation. It must either give rise to symptoms which threaten life, or be a source of such discomfort from its size or position as to prevent a patient enjoying a reasonably comfortable existence or earning a livelihood."

The late William R. Pryor, writing as recently as 1903 "For Students and Practitioners," emphasized that, "By no means does the discovery of a myoma indicate a surgical operation." Hirst advocates not even palliative treatment generally, and operative procedures under the most positive indications only.

On the other hand, Dudley advocates radical cure by operation and recognizes no palliation except, perhaps, curetment temporarily.

Charles T. Noble is likewise emphatic in advocating prompt and radical surgical procedure.

Peterson, of Ann Arbor, is an ardent advocate of unconditional annihilation of uterine myoma, as are most of the surgeons of the Middle West.

I beg to report several of my cases as being clearly indicative of the value of early radical operation.

Mrs. P., 56 years old, operated October 15, 1903. Sixteen

years previously she had put off operation, because she had been told by several consultants that her tumor would disappear after the menopause. Hemorrhage had never been troublesome. She had never been pregnant. Endometritis, leukorrhea, pressure symptoms and elevation of temperature had become constant symptoms. In the latter few years she had become bedridden and totally miserable. Hoping to restore physical comfort, and at her earnest solicitation for surgical relief, I did a supra-vaginal hysterectomy. There had formed many adhesions, which if encountered years before might have occasioned a much less formidable operation. The fundus presented a fluctuating mass. Being wary of a rupture of the mass, I cautiously tapped it, drawing off about a pint of strong smelling yellowish-green pus. The puncture was carefully closed by stitching and I proceeded by tying individual arteries. Hemorrhage from small branches of the uterine was controlled with great difficulty, so brittle had these become. The patient was put to bed in good condition and bid fair to recover. On the morning of the third day, however, she became pulseless and began to sink suddenly and died in a few hours. Undoubtedly her death was due to secondary hemorrhage from some blood-vessel too brittle to stand the strain of an increasing blood pressure, incident to recovery.

In contrast with this case of Mrs. P., I wish to report that of Mrs. V. B., aged 27, occupation nurse; first examined July, 1905. Family history negative. Personal history: Had the usual diseases of childhood. First menstruated when 14 years old. Had pelvic pain then, and dysmenorrhea ever since. Regular until one year ago, when the interval increased from four to five or six weeks. At this time also profuse leukorrhea began and the dysmenorrhea increased. About three years ago she began to have intermenstrual pain. This was steadily increased, particularly when on her feet, so that she had frequently to go to bed for a day or two. Complains of anorexia, constant headache, loss of weight and nervousness. Has dragging sensation in pelvis. Examination revealed a uterine fibroid, very sensitive but quite movable. Cervix and vagina normal. Tenderness in both ovaries.

Operation November 25, 1905, supra-vaginal hysterectomy, removing a tense multinodular intramural fibroid womb the size of a large orange, and a right ovarian cyst nearly as large. Her recovery was prompt and uneventful. At present she looks and feels well, has gained in weight, follows her occupation with renewed energy, asserting that she feels better than ever before in her life.

The third case of this series is that of Mrs. McS., aged 33, married thirteen years. Symptoms: Sterility, abdominal pain, vesical tenesmus with severe cystitis, which kept her in bed; slight hemorrhage, intense pain in left ovarian region. After a physical examination and a bare recognition of a tumor, I made a tentative diagnosis of first, a small uterine fibroid, anterior; second, extrauterine pregnancy; third, pyosalphynx.

The first and last were found to exist. Operation, total hysterectomy. Absolute relief followed from all her symptoms except the cystitis, which at times continues to trouble her somewhat.

As to the pyosalpynx, in this case it may be said that its origin is debatable. Roger Williams asserts that pyosalpynx frequently complicates myomata.

To quote from his "Uterine Tumors": "It is especially apt to complicate inflamed sloughing and gangrenous tumors." Of twenty-seven necropsies on myomatous women, he found three instances of pyosalpynx. He also reports Gow having met with pyosalpynx much more frequently, having reported series of three such diseased appendages out of five operated myomata.

A myoma in the anterior uterine wall may, even though small as in this case, set up by pressure an extreme vesical irritation with the possible consequence of cystitis.

The smallest specimen is from case four: Mrs. L. W., aged 43, married twenty-four years, mother of two children aged 22 and 17 years respectively. No pregnancies since. Has always had irregular, painful, prolonged and profuse menstruations. Had intense nervous symptoms, backache, headache, vesical tenesmus and rectal tenesmus. Weight reduced from 145 to 95 pounds.

Examination showed that the uterus probably contained a small interstitial fibroid. Operated February 5, 1903. Total hysterectomy. She improved promptly and has regained her weight. The fibroid, though growing slowly, had kept up a constant pressure and expulsive contraction, which by reflex distribution was imparted to the bladder, rectum and other related organs, causing intense suffering very much as an anal fissure often imparts profound misery to its possessor.

While it is frequently said that numerous fibroids exist entirely unknown to the woman and produce no harm, it may likewise be averred that many a fibroid kills the patient or ruins her health undiscovered. The smallest myoma may be a menace to life through a degenerative or suppurative process, or by sarcomatous change, as shown by Kelly, Cullen, Roger Williams and numerous other observers.

February 20, 1901, in the Cook County morgue, I saw an autopsy on a young woman in which the findings consisted of an edema of both lungs, and a general suppurative peritonitis due to a suppurating and broken-down pedunculated fibroid no larger than a plum, on the fundus of the uterus. Acute metritis, probably due to a recent miscarriage, infecting this benign neoplasm, causing her death. Such an occurrence is by no means exceptional. Ledjard has reported a case in which the slight wounding of an intrauterine myoma with the sound was soon followed by a fatal septicemia.

Williams asserts that "among the superinduced changes to which myomata are liable, those resulting from septic infection are clinically the most important. These comprise congestion, edema, inflammation, suppuration, sloughing and gangrene. The immediate exciting cause generally is some form of traumatism, especially wounds resulting from the use of the sound, curet, fingernail, electric-puncture needle, etc. It is probable that myomata in close proximity with the large intestine, especially when the latter is habitually distended by scybala, may be infected by microbes from the bowel."

The case of Mrs. P. indicates clearly that a woman carrying a fibroid does not approach safety when she approaches the meno-

pause. Ingraham reports a similar case—that of a myoma removed from a sterile woman aged forty, in which there were two large circumscribed abscesses filled with thick greenish pus.

The belief formerly prevalent, and still not entirely extinct, that myomata cease to grow and disappear altogether at the climacteric, is dangerous. Kleinwachter has shown that growth commonly continues. Indeed the disease is often accelerated rather than retarded after this period.

Moreover, the post climacteric myomata are even more prone than others to such complications as edema, inflammation, septic infection, calcareous degeneration, extrusion, inversion and gangrene.

Pean says that of his 250 operated cases, 100 were between 50 and 60 years old, and seventy were between 40 and 50.

It seems to me the time has come when all surgeons should agree on early operation for uterine myomata and that these neoplasms so potent for evil should be regarded with more suspicion.

The words "benign" and "innocent" applied to the woman's fibroid removes a load of doubt and fear from her mind. The oft-repeated advice that she should be instructed to report to her physician every six months for examination and observation of the growth of the tumor, and the development of any new symptoms, is fallacious and calculated to throw the woman off her guard as to danger, and to inspire lethargy and carelessness, until what might have been an operation of choice and of inconsiderate mortality, becomes one of necessity, attended by a strong chance for fatal issue, to say nothing of the mental and physical torture she has endured.

"When a woman with a myomatous uterus conceives, her life is in jeopardy, not only so long as the fetus remains, but also when it is expelled, whether this occurs prematurely or at full term."

In "American Medicine" for September 10, 1904, Charles P. Noble tabulated a series of 1,118 cases of fibroid tumors operated upon by Martin, Noble, Cullingworth, Frederick and Scharlieb, together with a series reported by Hunner and by McDonald, in which he shows that 16 per cent. would have died without operation on account of the degenerations in the tumors, and

another 18 per cent. would have died from the complications present. Taking in addition to this, what is well known, that a certain percentage would have died from intercurrent diseases brought about by the chronic anemia present in many of the cases, and by injurious pressure from the tumors on the alimentary canal and urinary organs; in other words, at least a third of the women having fibroid tumors would have died had they not been submitted to operation. In the light of the surgical past, when these neoplasms were often confused in diagnosis and treated with ovarian tumors, when they had not yet been associated with malignancy, when surgery was done by only the heroic few, when the control of hemorrhage in hysterectomy was poorly accomplished, when, above all, sepsis created such havoc in abdominal operations, it is easy to account for the negative attitude of twenty years ago.

But in the atmosphere of later research and clinical evidence, when sepsis is almost wholly banished, with the impulse which better methods have given to abdominal surgery, when individual effort is encouraged by the success of others, and, above all, when the far-reaching association of malignancy as well as the numerous other associated perils incident to fibroids are becoming recognized, it is out of all surgical spirit to diagnose a uterine myoma and then give its possessor the classical or traditional advice to wait for operation until urgent symptoms are manifest.

When, then, is operation justifiable? Whenever the condition of a fibroid uterus is such that it brings the patient to us. She is in no hurry to come, but does so because she is a sufferer and because she has symptoms from which she desires relief. Either she has hemorrhage, increased menstrual flow to such an extent that she can not make up the loss in the intervening three or four weeks and becomes anemic, or, if she has no hemorrhage, she has some form of pain, positive or reflex, which is often so intense as to incapacitate her; and it is for these reasons that she comes to us. We make an examination and find the cause which has made the woman an invalid—a fibroid tumor, either intramural, subperitoneal, sessile, pedunculated, multiple or simple. If this tumor has made her an invalid, immediate operation is justifiable.

CANCER OF THE UTERUS.

MAURICE I. ROSENTHAL, M. D., FORT WAYNE.

My purpose in writing this paper is once more to draw your attention to the many advantages of the Wertheim radical operation for cancer of the uterus. Up to this time the results from operations for cancer of the uterus have been most discouraging. Not to exceed 10 per cent. of the hysterectomies for cervical cancer have remained free from recurrence for a reasonable time, and this 10 per cent. probably represents the cases of cancer of the portio vaginalis cervicitis and of the fundus uteri.

We still occupy the position with reference to cancer which we occupied with reference to tuberculosis previous to Koch's paper on the tubercle bacillus in 1882, but while we do not know the cause of cancer, we are still in possession of certain facts from our clinical and pathological studies which are sufficient to guide us in our technique and in the selection of an operation. We know that there is a difference in the malignancy of cancers; such an evident difference that we may speak of benign cancers, that is, cancers which in their clinical history are comparatively benign, and the malignant cancer, those which earlier and more rapidly and broadly produce metastasis.

The malignancy or benignancy of a cancer depends not only upon its cellular structure, but more particularly upon the organ or part of the organ which it involves.

Baisch (Med. Korrespondenz blatt Wurtenberger Aerztliche Landes Verien), reports that in 120 abdominal operations for uterine cancer at the Tübingen Frauenklinik, operable cases showed no pelvic glandular involvement in cancer of the fundus, 30 per cent. of the cases of cervical cancer had metastatic glandular involvements, while of these cases, where the portio uteri was the seat of the disease, the parametrium was found involved two

times more frequently and the pelvic glands three times more frequently than in cases where the portio vaginalis was the seat of the disease.

We further know that in cancer of the uterus fixations of the organ and infiltrations are frequently due to inflammatory reaction from secondary infection. Adhesions and fixations are not necessarily cancerous.

We further know that cancer is infectious and must be treated just as carefully as we would a suppurating area in the protection of the field of operation.

Stitch-hole cancers and reimplantation by the knife are within the experience of most operators.

The status of cancer of the uterus may be very properly compared with that of cancer of the breast.

With simple removal of the breast and even examination of the glands in the axilla the number of operative cases remaining free from recurrence, local or remote, for a period of three years was less than 20 per cent.

Following the improved technique with removal of the glands in the axilla and of both pectoralis muscles and opening the supraclavicular space we now have 51 to 53 per cent. of the cases of breast amputations remaining free from recurrence for over three years; and these including cases which would otherwise have been rejected as inoperable under the old technique.

No operator would amputate a breast without considering the neighboring structures and glands, and just so in the near future will no operator excise a carcinomatous uterus without considering the parametrium and pelvic glands except in the early stages of the more benign cancers of the uterus.

The radical operation affords an inspection of the pelvic glands, and, what is more important, the safe excission of parametric and paravaginal tissues in full view of the exposed ureters. Portions of the bladder and rectum and ureters may be and have been successfully removed, while at the same time they are protected from accidental injury.

These three specimens of uteri which I have with me, removed

by the Wertheim method, nicely show the advantages of the operation. You will note that the excision is made through healthy vaginal tissue while the same is clamped off, thus avoiding danger of reimplantation and infection. By this operation return of the disease in the vaginal scar is the exception and not the rule. You will further note the broad excision of the parametrium.

Specimen No. 1.—Cancer of Collum Uteri.—In this case a woman some years past the menopause developed irregular hemorrhages and foul odorous watery discharge, has lost in weight; cachectic appearance. Examination reveals cervical endomeratrium breaking down, bleeds on touch, with soft necrotic area at about the internal os; uterus fixed by infiltrations in both broad ligaments; several suspicious glands were removed along the iliac vessels. You will note the broad excision of the parametrium, the uterine vessels having been divided at a considerable distance. You will also note that sufficient vaginal tissue remains with the uterus to insure excision through healthy structure.

Specimen No. 2.—Cancer of collum uteri removed from a woman 55 years of age. First symptoms noticed about a year before the operation. In this case vaginal examination revealed a large sloughing mass involving the cervix and vault of vagina. The examination brought about such a hemorrhage that the vagina had to be tamponed for hemostasis. The bladder seemed to be involved and the case had been declared inoperable. The bladder involvement proved to be inflammatory and the specimen was removed by the typical procedure.

Specimen No. 3 is also one of cancer of the portio uteri with a fixed uterus. A considerable excavation exists at about the internal os, which was almost perforated into the peritoneum by curetage and cautery.

I may be excused for again reporting the first two operations by this method which I had the good fortune to see while in Vienna, as they are very instructive. It was these two cases, among others from the great clinical material of Prof. Wertheim, which led me to adopt this operation, at least for the more malignant cancers of the uterus and for such cases as I had previously turned away without hope as inoperable.

The histories of these two cases as well as the illustrations and description of the operative technique are abstracted from the hospital records and literature furnished me through the kindness of Prof. Wertheim. Arch. Fur. Gynakologic Bd. 65. Casel. K. K. Koeserin, Elizabeth Hosp. Bethena stifftungs Pavilion.

Diagnosis: Carcinoma portionis uteri. Frau A. E., age 58 years, married, washerwoman. Climacteric at age of 47. Felt well to within last three months. At that time severe exertion caused pain in abdomen, which soon became intensified and localized itself in the lower pelvic region. At the same time vaginal hemorrhages often repeated. Watery vaginal discharge. Bowels and urination normal. Loss of flesh very marked in last few months. Lungs and heart normal.

Stat. Gyn. Carcinomatous nodules extending deep into uterus; both broad ligaments resistant. Douglass pouch especially hard. Uterus only very slightly movable. (Anesthetic method Schleich.) After very thorough curetage and application of Pacquelain cautery, a cavity was left extending deep into the uterus. Laporotomy by Dr. Micholitsch; bladder and rectum free. Posterior peritonitic adhesions inflammatory. Ureters not indurated. Parametrium resistant on both sides and uterus fixed thereby. However, by the typical procedure the operation was successfully accomplished. Parametric and paravaginal tissues were broadly excised. Some glands at the bifurcation of the vessels were excised, but were evidently not cancerous.

Peritoneal closure covering bladder and pelvis. In consequence of far-reaching excision of parametrium both ureters, especially the right one, were extensively undermined. Recovery uneventful, except a slight cystitis, which yielded to irrigations.

Before this abdomen was opened, I had expressed an opinion that the case was inoperable because of involvement of neighboring structures. I have turned away many such cases with fixed uteri and apparent involvement of neighboring organs which by this operation would have had a very fair chance for recovery.

Case 2. Diagnosis: Carcinoma portionis uteri. Frau S. E., age 39. Housewife. Menses were regular until within two

months, every four weeks, lasting six or seven days. Since last two months menses irregular. Profuse hemorrhages during last month, backache. Eight normal accouchments, last one three years ago.

Puerperium said to have been febrile. No vesical disturbances. Some trouble with bowels. Stat. Gyn. Extensive portio cancer. Bleeding freely and fixed toward the left pelvic wall. After excocleation with curete and cautery (Pacquelain), a very large cavity is left, extending beyond the internal os into the uterus and into fixation towards left pelvic wall.

Operation by Prof. Wertheim. Abdomen opened. Immediate discovery of hard carcinomatous gland, size of plum, in left division angle of iliac vessels. Ureters and bladder free. Operation done in regular typical form. The left parametrium into which carcinoma cavity extended, was divided with some difficulty. The diseased glands adherent to external iliac vein and hypogastric artery. The vein was freed all around and hypogastric resected. The peritoneal closure over bladder, as per modification by Koenig. Operation, one and one-half hours. Pulse 90 to 120 first day. Recovery uneventful, except slight cystitis. Urination spontaneous.

Now in this case the uterus could be brought down, although there was some fixation on left side. Uterus was more or less movable and yet there was great involvement of the pelvic glands, in marked contrast with case No. 1. By any but the abdominal route both these cases were inoperable, although I have attempted, and apparently successfully, the removal of such a uterus, as in case No. 2, by the vagina.

How useless a vaginal section, however broad and extensive, with such glands high up in the pelvis. Prof. Wertheim assured me that reappearance of cancer in the vaginal scar after this operation is the exception. This procedure practically eliminates reinvolvement of the vagina and at the same time secures accessibility to secondary pelvic deposits.

The vagina should be carefully cleansed. The cancerous arc cureted with sharp curet and then thoroughly cauterized with

pacquelain under a stream of water, so that the stream is driven well into the cancer-infected tissues.

Wertheim operation is performed as follows: After opening the abdomen with a median incision from the symphisis down to umbilicus with patient in exaggerated Trendelenberg position, the uterus is grasped with volcella and drawn forward. Now an assistant draws the adnexae forward and to the sides. As a rule the ureters can be seen under the peritoneum. The peritoneum over the ureters is picked up with pincettes and split. If the ureters can not be seen, their course is typical, and splitting the peritoneum in their direction will bring them to light. The peritoneum is split over the ureters in this manner until the parametrium is reached.

Step No. 2. Uterus is drawn towards the umbilicus. The bladder is separated at vesical fold, ligamenta rotunda, infundibulo pelica and lata are ligated and divided.

Step No. 3. Finger is passed through the parametrium so as to protect the ureter, the tip of the finger going through to the point just where the ureter leaves the bladder, in such a manner that the uterine artery lies over, while the ureter lies under the finger. The artery is now ligated and divided. This is repeated on the other side, laying bare both ureters.

Step No. 4. Now draw the uterus toward the symphysis so as to put sacro uterine ligaments in state of tension as in the drawing. Split peritoneum over posterior vaginal wall and separate rectal wall, which is easily accomplished, dividing the sacro uterine ligaments as near the pelvic wall as possible and catching bleeding vessels with hemostatic forceps and ligating the same.

Step No. 5. Separate the bladder from anterior vaginal wall. This can readily be done to almost any extent. Now, after having separated the vagina on all sides until it remains a simple tube, grasp the same with two angular Wertheim forceps and clamp off below the cancerous tissues.

Step No. 6. Cut across the lower border of the angular forceps, dividing the vagina. Now stitch the border of vagina as in the drawing. Before the clamps are placed in Step No. 5, the

vagina should be swabbed by an assistant so that no infectious material will remain in the canal to soil the peritoneal cavity when vagina is divided.

Step No. 7. The large vessels are laid bare by splitting peritoneum and the glands and fatty tissues are removed. The subperitoneal tissues are drained with gauze through the vagina and vesical peritoneum joined to that of the posteriorpelvic wall. For laying bare the ureters I have devised a pair of scissors with the pelvic curve, which I find of great assistance.

When the bladder is involved I find it best to remove part of the bladder with the vaginal wall and if necessary reimplant the ureter rather than run the risk of infecting the field of operation by cutting through the cancerous tissue with subsequent resection of the bladder.

Case No. 3. Diagnosis cervical cancer (portionis uteri). Mrs. M., age 43. Mother died of cancer of breast. Brother and sister both living and healthy. Menses regular, every four weeks, lasting five days. The last two years occasional metrorrhagia. Last five months some watery discharge, occasionally pinkish in color and some odor. Suffered more or less with pain in left side and back last two years. The last two months severe pelvic pain. During the last twelve days required morphine regularly every four to six hours. Temperature running from normal to 100, occasionally 102. Gyn. Sta. Uterus small, firmly fixed by mass on the left side extending to the bladder and vaginal vault anteriorly. Right broad ligament fixed. Portio vaginalis shows some old lacerations. Does not bleed on examination. Is more or less nodular and indurated. After curetage and cautery of the cervical canal the abdomen was opened.

Operation: Immediately on opening the abdomen the left ureter was found dilated and distended to the size of my little finger throughout its entire length. Right ureter normal, but undermined near its entrance at the broad ligament. Sacro uterine ligaments infiltrated near uterus. Bladder considerably involved at left ureter.

Notwithstanding the apparent hopelessness of the case, considering the extreme suffering of the patient, the operation was at-

tempted and completed by the typical method of Wertheim, except that a part of the bladder, as large as a half dollar, was excised, together with one and one-half inches of the left ureter. The right bad ligament was excised with some difficulty, because of parametric involvement near the right ureter. Bladder was closed with fine chromic catgut in several layers through the muscularis. Ureter was reimplanted into the bladder by a method which I have used several times during the last eight years and which I believe recommends itself because of its simplicity and rapidity. A long-pointed hemostatic forceps was passed into the bladder through the urethra by an assistant and made to press upon the bladder wall. At the point of implantation a small incision over the end of the hemostatic allowed it to penetrate the bladder wall. Ureter was now grasped by the hemostat and drawn into the bladder about one-half an inch, the end of ureter having been incised in its long axis to prevent stenosis. A few interrupted silk stitches were now placed to fix the ureter and the forceps withdrawn. The peritoneum was now replaced after the method described, except that the bladder was fixed to the pelvic peritoneum high up so that all tension was removed from the implanted ureter to prevent the same from being torn loose from any act of vomiting or other intra-abdominal strain.

Since this case was reported this patient died of nephritis.

In the first series of thirty cases operated on by Wertheim twelve died, but in the second series only five died as a result of the operation; causes of death in these cases were, in two cases, ileus without any demonstrable peritonitis, one case acute miliary tuberculosis, one case shock, one case pyelonephritis as a result of double ureter necrosis.

Improvement in the statistics in the second series is due to the perfected technique.

Doderlein: Tubingen. The operability of cancer of uterus from 1897 to 1901 was 45 per cent. by vaginal method and in the last two years by Prof. Wertheim's method it has reached 60 per cent. A number of cases in Wertheim's series, where cancerous pelvic glands were removed, remained still free from cancer two and one-half to three years after operation.

In Tubingen 44 per cent. of cases remained free from recurrence over two years, while the immediate mortality has been reduced from 16 per cent. to less than that of vaginal operation.

Franz (Halle) reports thirty-four operations, seven deaths, mortality 20 per cent. Deaths due to infection in six cases and in one case to shock. In twenty-four cases the glands were extirpated, and of these cases in eleven the glands were found malignant on microscopic examination (32.4 per cent.) These eleven cases could have had no hope from vaginal operation.

In Halle up to 1903 there were 283 radical operations with 54 deaths. Mortality 23.3 per cent. And in 184 cases in 68 (36.9 per cent.), the glands in the pelvis were carcinomatous, hence these 68 cases could not have had any hope from vaginal operation. Franque (Prague) reports 46 operations on cases of cancer of uterus, 29 abdominal. The mortality is 17.2 per cent.; 17 vaginal, with mortality of 5.8 per cent.

While the radical operation would seem the only rational procedure we must still consider its high immediate mortality. Although in Tubingen the mortality, which was 16 per cent., is much less at the present time.

Since early cancer of the corpus and portio vaginalis is of the less malignant variety, the vaginal route should still be employed. For cancer of the portio uteri the more malignant carcinomata, the Wertheim radical operation should be the operation of choice, and in all advanced carcinomata an attempt should be made to rescue the patient from the 100 per cent. mortality of either the vaginal operation of no operation at all, since many cases of so-called inoperable cancer easily come within the range of this technique.

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DISCUSSION OF PAPERS OF DRS. ROSENTHAL AND STOLTZ.

Dr. Porter: Dr. Pfaff had to be away, and he asked me to give this discussion of Dr. Rosenthal's paper.

There is certainly no regularity as to the time of metastasis, and no accurate way of determining its presence during operations. The size and consistency of the gland is never conclusive; enlarged glands are often benign and very small glands often show malignancy under the microscope. The disease often spreads through the interglandular spaces and along the course of vessels and nerves without any apparent involvement of the lymphatics, so that as a matter of fact we never have any kind of assurance that even the most radical operation has removed the disease entirely. In view of the fact that in spite of all that has been done, recurrences are the rule in the vast majority of cases, and that recurrences are nearly always in the neighborhood of the original growth, it can not appear that the radical operation has lowered the death rate from cancer. A wide removal of all surrounding structures without special regard to the glands is to my mind the most reasonable procedure at the time.

We are all of us every day engaged in the business of deciding questions of serious moment for our fellows; and we can not escape the responsibility of maintaining a highly judicial frame of mind together with the spirit of optimistic aggressiveness.

In our eager contest for the mastery of cancer we shall no doubt continue to meet with many rebuffs before the final consummation of that stupendous victory; in the meantime our progress is notable and the gait is splendid.

It has been but a comparatively few years ago when cancer was treated by escharotic pastes and powders, and honest attempts at cure never made in the matter. We then took up the curet and occassionally the hot iron was superficially applied, still hoping for cures. The high amputation of the cervix offered rosy promises, which were mostly illusive; as was also the deeper application of the actual cautery; but when complete vaginal hysterectomy was shown to be feasible our hopes again ran high. However, when August Martin visited this country some twenty years ago he

experienced such difficulty in finding among all of the cases offered one which was really operable, that we at once realized that only the early cases were to be saved by this method. Since then men all over the world have striven to enlarge the circle of hope so as to include the more advanced cases, but as yet, I believe, have very little to show in the way of permanent cures.

Abdominal hysterectomy presenting the greater exposure of operative field might seem to offer superior guarantees of success; it is undoubtedly in many cases the operation of choice, but not to the entire exclusion of the vaginal method, which still has an important place.

By the abdominal route very radical methods have been advanced by Werder of Pittsburg and Wertheim of Vienna, and their followers, the important feature of which is the extensive removal of the pelvic lymphatic glands. Now, if metastasis occurred through the lymphatics only, and if the lower glands were alone concerned, the reasonableness of this radical procedure would hardly be challenged excepting as relates to its higher immediate mortality; but such is certainly not the case.

Schauta of Vienna, who has had great experience in this surgery, has made some very careful and well authenticated researches which are significant. Schauta analyzed sixty cases post mortem, paying special attention to glandular metastasis.

Of 60 cases operated, 11 died from surgery, 9 died from intercurrent affection and 40 died from cancer. Of the glands removed, 13.3 per cent. were lower glands and diseased, 8.3 per cent. upper glands, diseased; 35 per cent. both upper and lower, diseased, and 43.3 per cent., both upper and lower, free from disease. Only 13.3 per cent. of possible success by radical surgery; 43.3 per cent. of the glands healthy, showing that most cases die of local recurrence.

Dr. Porter, of Fort Wayne: As Dr. Rosenthal knows, I am not so much an advocate of the radical method as is the doctor, and my reasons are given pretty forcibly in the paper which I have just read from Dr. Pfaff. The fact is they have yet to show not only that they can do the operation with a less mortality than

can be done by the vaginal operation, but they have yet to show a better death rate, a larger proportion of recoveries after three or five years. We want to get down to the cold facts. The fact is, not one of us has ever yet succeeded in having as many radical cures as the operators sustaining high amputations of the cervix do. These are the cold facts. Now, then, in order for this operation to stand, we must know how many cases they have operated on and how many cases there are living free from the disease after a period not of three but of five years. Then if we find a per cent. overwhelmingly in favor of this operation we should adopt it, but it must be rather overwhelming, because of the fact that up to date this operation carries with it a mortality in round numbers double that of the other method in equally capable hands.

I want to call attention to one case. How old did you say the lady was, Dr. Rosenthal?

Dr. Rosenthal: Forty-three years of age.

Dr. Porter: You say she was forty-three years of age, and with a woman that age it doesn't make much difference if you do take out the uterus in an operation, but with a woman of twenty that would not do, and I am sure you will admit this. This case is interesting because we have a condition here which kills a great many people; it is not a fibroid, but a simple case of parametritis, the result of infection following a plugged uterus, and this is a cause for death in a great many cases; it carries a great many away. It is a mistake to suppose that when they pass the change of life there will be no trouble; the first one I ever removed in my life I was called six months after that time.

There are other things which I would like to say on this subject, but time will not permit. There is one thing I forgot in regard to Dr. Rosenthal's paper. Did I understand you to say there is no cure after vaginal hysterectomy?

Dr. Rosenthal: I said the results were nil.

Dr. Porter: Well, without being able now to point to the figures, I want to say very positively that I believe that the doctor

is wrong; I do not believe that is true, doctor; I do not believe any such thing; I do not remember of ever having looked at any statistics which deal entirely with the uterine portion of the cervix which we are talking about in connection with this case. For my own part, if it is not wrong I can make it wrong; I know my own statistics. I can say that there is one patient living after six years from that kind of a cancer. She was married about four years after the operation was made and resides a short distance from here.

Dr. Thomas Eastman: I rise to indorse the sentiment expressed by Dr. Stoltz in regard to early operations upon fibroid tumors of the uterus. Last year at a meeting of the American Association I read a paper in which I advocated the removal of all fibroids upon diagnosis, and while I had the support of the majority of the doctors present, quite a few unqualifiedly condemned my position; however, I have seen no reason to change my mind. A great many of these men who procrastinate in regard to fibroids take out appendicitis early in the career of the disease, and on the other hand they operate on all sorts of deformities that do not threaten life, and where there is no particular occasion for operating, yet they make a special dispensation for fibroids. They let them go along until something turns up. Now, I was convinced that this radical proposition was right within a very short period of time three or four years ago, and there is one case in particular that I call to mind and that is of a young woman twenty-seven or eight years of age, who came to me with a fibroid tumor perhaps as big as my head, which she wanted removed. I did not want to remove it and I told her that as it was a dangerous operation and it was giving her no serious trouble I did not think best. But she said, "Doctor, some of my acquaintances are making oblique remarks about me, and I want the tumor away if for no other reason." I told her that I was going on my vacation but that I would be back in a couple of weeks and would see about it. When I came back she did not come around and I asked what had become of her, and I was told that she had died. What was the matter? That and other cases convinced

me that there should be no delay in the matter. I have operated on six or seven lately that would have caused death sooner or later. As long as the operation is done properly, and by those who are competent to do it, the death rate is very low, and I dare say we will save more lives by operating on tumors when we find them than we will by letting them go.

Chairman Stevenson: Is there any other surgeon who wishes to discuss this question? If not, I will call on Dr. Stoltz to close the discussion.

Dr. Stoltz: With reference to the remarks of Dr. Porter, I have no particular objections to make, and I think very likely it could be granted that they are true, but in a closed uterus—however, I refer to literature on the subject—the trouble has not been the same as an abscess in the wall or a broken down fibroid, or what not, with a plugged uterus, and will not make any difference with reference to the classification of this one here; I think it is hair-splitting. It is the muscles about the uterus and the question seems to be as to whether or not it should have been removed. I think there is very little to quarrel about on that question. I haven't any more use for a uterus that is a continual source of trouble to the woman than I have for any other organ that becomes a source of trouble. We like to have both the legs and the feet left on, but sometimes when they are troublesome we have to have them taken off. I do not think we need to go very deep into such a question when a woman for eighteen years, as this woman was, has been sterile; in a case like that there is not much to consider. The truth of the matter is that a woman who has a fibroid is sterile, anyway. I do not have a single regret to make, for she would not have borne children anyway; this belongs to the prenatal period. I am not a lover of this kind of surgery and do not seek after it, but I think there is a wide field here for discussion and I think the field for vaginal surgery is very small. Another reason is, when you have once submitted a woman to an operation for cancer of the uterus, or fibroids of the uterus, I think it is your business to know just what is the matter, and I

think there is justice in taking a pretty good view of the tissues in connection with the ones in which we are dealing. An exploratory operation in connection with an operation is of value. We frequently find gall-stones and other difficulties associated with these neoplasms, and we could as well do the multiple operation at the same time.

With reference to the discussion in regard to the radical operation for a cancer, I will say I do not believe we will do very much with a cancer of the uterus until we get some way to eliminate the uterus, which seems to be in a very, very large proportion of cases to be the tract by which the infection is carried, or the infiltration is carried. I think a great deal of extensive operation; the farther you get away from the disease the better, for the gland tracks are after all a large source of trouble, and these are the tracks which most often give you the difficulty.

Chairman Stevenson: Dr. Rosenthal, you may close the discussion.

Dr. Rosenthal closed the discussion by verbal explanation of a series of illustrated charts.

OTORRHEA, ITS SIGNIFICANCE AND IMPORTANCE OF TREATMENT.

BY DANIEL W. LAYMAN, B. S., M. D., INDIANAPOLIS, IND.

In considering a subject for this paper it seemed to me that it might prove interesting and of practical value to discuss otorrhea and its various phases, inasmuch as this is a common affection, and one that is frequently brought to the notice of the general practitioner.

Otorrhea has been with mankind, so far as we have any record, since the days of the ancient Egyptians. But we have had to wait until the dawn of the twentieth century for a treatment worthy to be considered at all scientific and acceptable.

An American aurist gives Gabriel Fallopius, of the sixteenth century, the honor of having first taught that a discharge of pus from the ear should not be meddled with. Fallopius gravely taught and it was repeated by some of his successors for hundreds of years that the discharge of pus was an effort of nature to throw morbid material out of the head through the ear. This delusion of Fallopius has survived even until the present day. The usual absence of pain or other disturbing subjective symptoms, the fact that the morbid processes are concealed from view, and ignorance of the possible consequences of the disease have fostered this laissez faire theory. Besides, the laity have been taught to believe that doctors pay very little attention to a long-standing discharge from the ear, or at any rate that medical assistance will be of no avail.

Most of the cases of otorrhea coming under treatment are due to suppuration of the middle ear, but as this does not account for the discharge in all cases we have to consider other lesions that give rise to this symptom.

A knowledge of these lesions is one of the essentials necessary

for a satisfactory management of the case. The other essentials may be summed up as follows: Sufficient skill to make an intelligent examination of the drum membrane, and sufficient familiarity with symptoms to diagnosticate the existing conditions. Equipped with these essentials the physician, even though he does not care to treat the case or does not possess special skill for the purpose, can advise correctly whether anything ought to be done or not, and, if so, what.

A complete recital of the pathological conditions that may cause aural discharge will not be undertaken here. Suffice it to mention the conditions most frequently met with. The middle ear is the seat of the following lesions of which otorrhea is a symptom:

A. Acute catarhal otitis media.

B. Chronic catarrhal otitis media.

C. Acute purulent otitis media.

D. Chronic purulent otitis media.

Compared with middle ear lesions those of the external auditory canal constitute a small number of cases. The most frequent are:

A. Circumscribed otitis externa, or furuncle.

B. Diffuse otitis externa.

In addition to the above, the discharge, due to infection of parotid glands, mastoid and adjacent tissues, may find an outlet through the external canal. The discharge varies in amount and the character varies in color, odor and consistency according to the morbid process. According to the character, the discharge may be classified as follows:

1. Nonpurulent—(a) Serous, thin, transparent, watery; (b) sero-mucous, thick, opalescent.

2. Mucopurulent—(a) Tenacious or stringy.

3. Purulent—(a) Pus-like, that which imports a milky color to water used in cleansing the ear, or thin like meat-juice, of bloody nature and corrosive.

The character of the discharge will sometimes aid in determining its source. A serous, thin, scanty discharge points to a lesion of the canal or drum membrane. A seromucous or mucopurulent

discharge has its origin in the middle ear. A recent purulent discharge may result from a diseased condition of either the auditory canal or of the middle ear; and a chronic profuse purulent discharge almost invariably comes from the middle ear and adjacent structures.

The discharge varies in quantity; it may be so slight that the patient may not be aware of its presence, or it may be so profuse as to fill the canal soon after syringing and drying. The discharge has frequently an offensive odor, either due to caries or failure to cleanse the ear properly. It may be tinged with blood, especially when there are granulations or polypi in the ear. As the morbid process progresses, the character of the secretion presents great varieties in different cases, and in the same case at different times.

BACTERIOLOGY.

The routine bacteriological examination of the secretion removed from the tympanic cavity has not been strictly followed, nor is it deemed necessary. Since it has been demonstrated in severe cases, clinically speaking, that the discharge shows in some the streptococci, while in others only the milder pus germs, a bacteriological examination of the discharge is of significance only in that it points to the characteristic infection. Therefore it is wise to rely chiefly upon the symptoms and physical signs when a question of operation arises.

Besides observing the character of the discharge, the doctor must deem it of equal importance to ascertain the history of the case. The following questions will be found valuable for this purpose:

1. What is the duration of the discharge?
2. Has there been any previous attack of running ear?
3. Has the discharge been continuous or intermittent?
4. Has the quantity of discharge varied?
5. Has the discharge been offensive?
6. If intermittent, has pain preceded appearance of discharge?

Data thus obtained is of significance in the treatment of otor-

rhea, inasmuch as the history of a case bears directly upon the treatment. Cases which give a history of former attacks of running ear are more difficult to treat than those which present a first attack. A sudden cessation of the aural discharge is one of the most important symptoms, other symptoms persisting, in determining a mastoid invasion. Moreover, a variation in the quantity of the discharge is significant, because a diminution in the flow, due to an obstruction developing in the additus, is likely to be coincident with the development of mastoid pain or tenderness; while a marked increase of flow points to an extension of the inflammatory process over a larger area. Another instance may be cited of the value of careful questioning. When otorrhea has existed for two months and the discharge has been constant and profuse, the physician may assume the source is in the middle ear. On the other hand, a recent discharge may have its origin in a diseased condition of either the external auditory canal or the middle ear.

Let us now consider briefly the discharges most frequently met with. A serous discharge arises usually from lesions of the external meatus, such as those caused by vegetable parasites, and those of an eczematous nature. A variety of aspergillus is a common cause of watery discharge from the ear, in which case the discharge is usually scanty and readily dries about the orifice of the canal.

An acute purulent discharge of a sudden onset and brief duration either comes from a localized infection of the tissues of the canal or from infection of the structures of the tympanum. A localized or circumscribed infection of the canal is nothing more than a furuncle, which may appear singly, or there may be a crop of furuncles appearing successively. Since a furuncle in the canal, when first seen, might be mistaken for purulent otitis media, it is well to emphasize some of the symptoms. A furuncle is of common occurrence in adult life, whereas in infancy it is rare. The condition is accompanied by severe pain in the ear, which pain is differentiated from otitis media pain by being especially called forth by pressure in front of the tragus. Moreover, the

discharge from a furuncle only continues for a few days, while in a case of second or successive infection the discharge is intermittent and not continuous, as its presence depends upon the rupture of each successive furuncle.

The causes of acute purulent otitis media are well known to every practitioner. The most common and most virulent factor is the poison of some acute infectious disease, such as scarlatina, epidemic influenza, measles, pneumonia and diphtheria. In these diseases and other "infectious colds" the naso-pharyngeal space lodge infectious material, which readily finds its way into the tympanum through the Eustachian tube. It is readily understood that the fauces and vault of the pharynx harbor more infection if filled with hypertrophied lymphoid tissue. Adenoids and hypertrophied tonsils are therefore a frequent cause of acute middle ear suppuration. One should never fail to examine a child for this lymphoid tissue, especially if the child gives a history of recurrent attacks of otitis media. The chances are, one will find the adenoids, tonsils or both, large enough to require removal.

If the practitioner only recalls the possible dangerous sequela of acute purulent otorrhea, such as middle ear necrosis, cicatricial bands, sclerosis, mastoiditis and intracranial complications, he will appreciate the importance of the recognition and treatment of this condition in its very early stage.

A chronic purulent discharge is so called when the discharge has persisted more or less actively for three months or longer. If of such duration it must necessarily come from a middle ear lesion, which is a more or less extensive suppurative process. If it includes an extensive caries, the discharge is either thick, cream-like and copious, or, as is often the case, it is of the nature of meat juice, being thin, corrosive and of a bad odor. In the chronic form the discharge continues uninterruptedly or it is intermittent, that is, stops entirely, then there appears an acute exacerbation due to reinfection or defective drainage. The discharge may be purulent from onset; or it may become purulent by infection of a previous serous or seromucous discharge. With few excep-

tions, such as the tuburcular and syphilitic forms, chronic suppurative otitis media is due to neglected and incompetent treatment of acute middle ear suppuration.

In considering chronic purulent otorrhea one must bear in mind that the destructive process in the middle ear may be quite extensive, involving not only the soft tissues, but the ossicles and bony walls of this cavity.

Before taking up treatment I wish to mention some of the dangers associated with otorrhea, if allowed to continue. Discharges in external auditory canal render the cutis more susceptible to infection, hence the frequency of furuncle. A furuncle when produced may involve the adjacent parts, causing a perichondritis of the canal, periostitis of the osseous portion, suppurative inflammation of the parotid gland and even otitis media with its various complications.

I have mentioned that neglect of the treatment of acute middle ear lesions may develop serious complications, or sequela. Allowing the acute forms to become chronic we have then a condition from which develops complications that are more frequent, more far-reaching and more severe than those from any other form of otorrhea. The complications most feared are extensive erosions of the bone, suppuratve mastoiditis, sinus septic thrombosis, meningeal inflammations and brain abscess. These complications not only produce extensive destruction of the middle ear and adjoining structures, but are the cause of more deaths than the profession realizes. Dr. Robert Lewis states in an article in the Medical News, January 17, 1903, that in this country 4,000 cases of brain abscess of otitic origin, or about one in every 19,000 population, annually die; while according to Koerner, the Prussian statistician, there are about three deaths in every 20,000. Half of the brain abscesses of the world are probably due to purulent tympanic infections. That chronic purulent otorrhea is responsible for most of these one can readily see by referring to the statistics of Jansen. Jansen found in 2,650 cases of acute middle ear suppuration, one brain abscess; in 2,500 of chronic suppuration, six brain abscesses. Not only

brain abscesses, but all intracranial complications, as well as acute mastoiditis of middle ear suppuration occur more frequently with chronic diseases of the tympanum than with the acute form. Insurance companies have recognized the importance of this fact. It is well known that chronic cases are objectionable risks, indeed uninsurable in most companies.

To give a complete recital of the treatment of aural discharge would require more time than is allotted for the reading of this paper. A general outline is all that can be attempted here. The first object of treatment should be to prevent the retention of discharge in either the canal or middle ear. The second object should be to secure through surgical cleanliness—that is, to put the ear channel in as aseptic condition as possible and maintain it in that condition. The third object is to arrest the discharge.

In passing, I wish to state that in all cases of otorrhea the use of the mirror and speculum are essential. It is always necessary to syringe the ear, afterward drying the canal with cotton applicators in order to obtain a good picture of the exact condition of the interior.

In removing the discharge the use of either the ordinary piston syringe or soft bulb syringe is recommended. To obtain good results one should acquire proper knowledge of the amount of force to be used in injecting the cleansing fluid and care should be taken to draw the auricle upward, backward and outward during the process, in order to overcome the curve of the canal that the deeper portion may be reached by the fluid. An exception is made in case of infants when the auricle is drawn downward, backward and outward.

To secure thorough surgical cleanliness it is necessary to use a cleansing fluid that is antiseptic in character. For the removal of the discharge in catarrhal cases and less severe purulent cases a two to four per cent. boracic acid solution is a good cleansing fluid. While in the worse purulent cases a solution of bichloride of mercury of the strength of 1-4.000 to 1-10,000 is found to be excellent.

The temperature of the irrigating solution should be about 102

degrees F. The quantity of solution used and frequency of irrigation of course depends upon the character and amount of the discharge, but half a pint is usually found sufficient. Some cases require cleansing regularly every two hours, while with other cases once daily or less often will suffice.

In the worse cases of purulent otorrhea an excellent adjunct in the treatment is to follow the irrigation by an occasional instillation or application of a few drops of dilute alcoholic solution of the bichloride of mercury, a strength of 1-3,000, the following mixture being the one Dr. Dench employs both in his private work and in his ear clinic at New York Eye and Ear Infirmary:

Bichloride of mercury	1 part
Water	1,000 parts
Alcohol	2,000 parts

Its action is par excellence in maintaining an aseptic condition of the canal. The solution can be applied with cotton tipped applicators directly to the walls of the canal, drum membrane and to the tympanic wall when the membrane is largely destroyed. It should be employed at least three times a week. Sometimes daily applications are necessary.

It is impossible to maintain perfect drainage and an aseptic condition of the canal wall and middle ear by stuffing the ears with cotton or filling the canal with powder. Cotton keeps the canal walls pus-soaked, thereby causing dampness and increase of temperature, thus producing a favorable soil for the growth of fungi and germs. Powders injudiciously used form impenetrable masses and prevent free drainage.

Asceptic treatment will not only minimize the danger of infection of acute nonpurulent otorrhea, but in most acute cases will cause a complete subsidance of the discharge. An additional treatment of otitis externa, however, may be necessary. Antiseptic cleansing and dusting with a powder such as boracic acid or zeroform is the usual method of procedure. In the eczematous and parasitic forms the treatment appropriate for these affections should be employed. An ointment such as oil of cade

in lanolin and zinc oxide or 2 per cent. salicylic acid ointment is effective in the eczematous variety. The worse cases may need a stimulating solution such as silver nitrate 10 per cent. to 30 per cent. applied to the walls after the scabs have been removed. The parasitic form, such as aspergillus, usually succumbs to the repeated application of 2 per cent. salicylic acid in alcohol, or repeated ear baths in warm alcohol.

In every case of otorrhea the above method of irrigation, instillation and application should be employed, with the additional treatment as mentioned in special cases. Sometimes, however, the discharge of acute purulent otitis media will fail to subside after conscientiously carrying out this treatment. In such cases the drainage will often be found to be incomplete. This defect can be remedied by a free incision of the drum membrane, employed, of course, only after a careful examination with the speculum. After the cessation of an acute middle ear discharge inflation is necessary to overcome the disturbed condition of hearing.

The treatment of chronic middle ear suppuration presents greater difficulties. The methods already recommended for the treatment of acute middle ear otorrhea should be employed before special measures are instituted, as these are more likely to be beneficial if adopted when the canal is clean and in as asceptic condition as possible. It is frequently necessary to free the tympanum of granulations and polypi which often confine the discharge. These may be destroyed by caustics, such as nitrate of silver, chromic acid or trichloracetic acid. The parts to be cauterized should first be cocainized to avoid pain. In removing this tissue some prefer the use of the sharp curette or cold wire snare. In some cases intratympanic or attic syringing is necessary. The sterile or antiseptic solution is injected through the perforation until the cavity is cleansed. This is followed by an astringent solution, or the condition of the attic may call for an application of some caustic, such as chromic acid.

Owing to the "round the corner" location of the pathological conditions in the attic, it requires special treatment to be effective on granulations, polyps and cholesteatomatous masses found in the

accessory cavities of this epitympanic space. The special treatment consists in the proper manipulation of fine flexible silver probes, small curettes, small spoons and an attic syringe. Judicious and skillful employment of one or all the above instruments will ofttimes avoid the necessity of performing a radical operation which at first seems to demand a radical procedure.

Inflation of the Eustachian tube, and rarefaction of the air in the external meatus are sometimes good adjuncts in the treatment of chronic purulent otorrhea.

For fetid odor of the discharge a number of drugs have been strongly recommended. The most efficient are formalin, alcohol, hydrogen peroxide, alphozone, permanganate of potash, lysol and creolin. Formalin is best used in 1 per cent. solution made up in alcohol and water as follows:

Formalin	5 drops
Alcohol, 95 per cent.....	2 drams
Aqua Q. S. ad.....	1 ounce

Five to ten drops of this solution dropped in the ear a few minutes after syringing has an excellent effect, not only in relieving the odor but also in freeing the tympanum of granulations. The use of hydrogen peroxide is not free from danger, except in cases of very large perforations. Then one should not hesitate to use it. A one-half dilution combined with boric acid makes a good irrigating solution. However, alphozone, a germicide and deodorizer, is a good substitute and free from the danger of the peroxide, which sometimes forces infection in adjacent parts by its effervescent properties.

Alcohol treatment in certain cases is most efficient. This consists in ear baths of 50 per cent. solution of warm alcohol, which is allowed to remain in the ear 10 to 15 minutes. In using these various solutions I find that sometimes the one and sometimes the other will prove most effectual.

In chronic purulent otitis media, as in the acute forms, free incision of the drum membrane may be necessary to secure perfect drainage. Free drainage does not always depend upon the

size of the perforation, however. There may be extensive destruction of drum membrane and yet be defective drainage. Such a condition is either due to inflammatory adhesions or a blocking up as it were, with chlolesteatomatous material.

Success in the nonoperative treatment of chronic otorrhea depends upon two things. First is the careful personal attention that the otologist gives to the case, and secondly the co-operation of the patient by being attentive to the physician's instructions and punctual in attendance.

If after exhausting all the measures enumerated in the treatment of chronic purulent otorrhea, the process still remains active, it is due to an infection of the bony structures surrounding the tympanum, or within the mastoid process. In such cases the treatment is eminently a surgical one. The problem differs somewhat according to the stage the disease has reached. The simpler the operation the better for all concerned. When the necrosis is confined to the ossicles, and even where there is possibility of a slight encroachment of tissue necrosis upon the tympanic walls adjacent to the malleus and incus, ossiculectomy or excision of the remaining portion of the ossicular chain, followed by a thorough couretment of the tympanic cavity, gives good results.

If the simpler methods of treatment have been ineffective, or if one is sure of an extensive invasion of the osseus structure immediately surrounding the tympanum, or if the process has extended to the adjacent spaces within the mastoid, indicated usually by one or more of the following symptoms—pain or headache, local tenderness upon deep-seated pressure over the mastoid region, sleeplessness, stupor, accelerated pulse and evening rise of temperature—an intratympanic operation will be inadequate and a more radical operation becomes necessary, such as a Stache or Schwartze-Stache or some of its modifications, a number of which have been introduced by our own American otologists. I purposely omit any description of this operation, as a fit discussion would require a special paper. Suffice it to say that in this operation the infected area is attacked from the outside, after detaching the auricle and fibrous canal from the bony structure. After ex-

tensive removal of the mastoid cells, the antrum, tympanum and adjacent pneumatic cells should be freely exposed, all infected parts removed and the three spaces transformed into one cavity.

Before closing treatment, attention must be called to the preventive, hygienic and constitutional treatment, all of which have an influence on the progress of otorrhea. We are all alive to the up-to-date motto, "Prevention is the keynote of Modern Medicine." It is applicable here as elsewhere. The number of cases of otorrhea can be greatly reduced by the proper recognition and treatment of naso-pharyngeal affections, acute aural disease and the recognition and removal of adenoids and hypertrophied tonsils.

We should make ourselves familiar with the patient's general health, encouraging everything of a systemic nature that can exert a favorable influence upon the local disease. Avoidance of exposure to severe cold, wind, rain, sleet or snow should be advised, as an affected ear is intolerant to cold.

I beg to submit the following recapitulation in the way of emphasis:

1. Otorrhea has not received the attention it deserves from the practitioners of medicine.

2. In all cases attended by aural discharge objective examination of drum membrane and sufficient familiarity with symptoms to diagnosticate the various conditions are essential.

3. Remember the various methods of treatment one can adopt in the prevention of middle ear suppuration: (a) The importance which adenoid growths in the vault of the pharynx and enlarged tonsils play in the cause of recurrent middle ear suppuration must not be overlooked. (b) Proper and early treatment of acute otitis media developed in acute exanthemata, grippe, colds, etc., is of the utmost importance.

4. Incompetent or neglected treatment of the acute state invariably lays the foundations for that insidious and obstinate disease, chronic suppurative otitis media.

5. Once established, chronic suppurative otitis media demands serious attention.

SOME COMPLICATIONS OF MIDDLE EAR INFECTION.

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In selecting a subject for a paper to be presented to this Association none has appealed to me as being of greater importance for your consideration than some of the complications arising from infective inflammatory processes in the middle ear.

The insidiousness and seriousness of these affections to life and future wellbeing can not be overestimated. And the early recognition and proper treatment of all inflammatory otitic affections have now become well founded scientific obligations upon the profession.

The time was, within the recent past, that a diagnosis of meningitis, brain abscess or any inflammatory affection of the intracranial contents carried with it, even in the minds of the laity, an idea of a condition that was irremediable and of unavoidable death. The physician, also concurring in this belief, would retire, after the fatal termination of the case, with a light conscience and a full feeling that nothing could be done to prevent an almost absolute mortality in such conditions.

But since the investigators in this branch of our profession have demonstrated that the majority of cases of meningitis, brain abscesses and sinus thrombosis with pyemia are the result of infective inflammation in the middle ear and mastoid process, we can not longer shirk responsibility and claim immunity from blame in the fatal termination of all such cases, but are held to account by our own conscience, if not otherwise, first, for permitting in many cases the condition to come about, and, second, to refuse to resort to rational efforts for relief after the condition has been established.

I have chosen this subject for two reasons—first, because the general practitioner acknowledges that he gives little or no atten-

tion to ear diseases, and, second, that I may direct your attention in a small degree to certain well-founded observations given to us by the leaders in otology within the last few years, hoping that by so doing you may keep in mind the possibility and seriousness of the complications, to be recited later on, in every ear case that comes under your observation—for the major per cent. of these cases are seen first by the general practitioner.

I will call your attention first to some of the prominent causes of middle ear infection, not as an integral part of the subject-matter of the paper, but as a basis to be borne in mind relative to the deductions arrived at later upon the complications.

We find the causes of middle ear inflammation that perhaps head the list to be the diseases peculiar to childhood, diphtheria, scarlet fever, measles, whooping cough, chicken-pox, acute naso-pharyngeal catarrh, adenoid vegetations in the vault of the pharynx, and last, but not least, la grippe or influenza; also, the infectious fevers, as pneumonia and typhoid. Jacobi states that "otitis may be either a mere surface inflammation or one complicated with thrombosis or suppuration or caries, or facial paralysis or meningeal complications. It may be primary or secondary to a naso-pharyngeal disease, may be caused by or appear contemporaneously with pneumonia, cerebro-spinal meningitis or enteritis." All specific infectious maladies are factors in the causation of middle ear inflammation. You observe, therefore, that the causes are varied and manifold. I trust then that you will not fail to keep in mind the possibility of this seemingly innocent but often very dangerous complication when any of the foregoing diseases are under observation.

I will ask your attention first to the most frequent complication of middle ear infection, namely, mastoiditis. Mastoid inflammation may follow in any case of middle ear suppuration, whether acute or chronic. When you remember that the middle ear, aditus ad antrum and mastoid cells are practically one cavity, freely communicating and lined by an identical histological mucosa, it is not difficult to understand how an infection beginning in the middle ear may readily extend to the remainder of the cavity,

or at least a part of it. And it is strange indeed that, with conditions seemingly so favorable, mastoid inflammation is not more often met with. We can all recall, perhaps, innumerable cases of chronic suppurative otitis which have existed for years without mastoid involvement. It is an interesting fact to be borne in mind that the most trivial cause, and, as Dench says, often unrecognized, may superinduce a mastoid complication in a chronic suppurating middle ear that has gone on for years. It is difficult to understand why, in this condition, a mastoid infection is postponed over such an indefinite period, and in many cases never occurs. When a suppurating ear is under treatment frequent examination of the process should be made. In acute mastoid inflammation following either acute or chronic middle ear infection, pain is a prominent symptom, referred to the mastoid region or sometimes to the entire side of the head.

It is not especially violent in character, but more of a dull, well defined type. If the middle ear disease is acute or an exacerbation of a chronic type is present, the pain in the mastoid and ear will be more pronounced than will be the case in chronic inflammation of the mastoid. Pain in chronic suppuration of the mastoid is usually absent unless drainage should be inadequate. If so, pus retention may cause some pain. Tenderness on pressure, however, over the mastoid is a most trustworthy symptom and one that I have always found present. In the chronic cases especially, tenderness and a discharge from the ear may be the only symptoms portraying an extensive destruction of bone in this locality.

I have operated in several instances in which these were the only symptoms of complete cellular disintegration. In fact, gentlemen, because of the nonurgent symptoms in this type of the disease, these cases may become the most formidable of those with which we have to deal. In acute cases, tenderness on pressure is usually present over the entire process. In the chronic cases, however, it is more localized, either over the antrum or at the tip. This fact should be kept in mind; otherwise, this important symptom may escape observation. I would have you remember that tenderness on pressure in the postauricular region has more diag-

nostic significance than does subjective pain. The temperature in uncomplicated mastoid infection does not, as a rule, go above 100 to 103 degrees F., but in the very beginning and in children it may reach a higher degree. The temperature will vary according to the character of the infection and the activity of the inflammation. If the mastoid disease is accompanied by some of the acute specific diseases, the temperature will be of less diagnostic importance as regards the ear inflammation. There is nearly always present a purulent discharge from the middle ear concurrent with or preceding the mastoid inflammation. If good drainage has been established, spontaneously or otherwise, the discharge will usually be profuse. Inadequate drainage is often encountered on examination of these cases and is a potent factor in the causation of mastoid disease. If the discharge has been rather free and suddenly becomes less, with pain and tenderness in the postauricular region, it is almost infallible evidence that the inflammatory process has extended into the antrum and cells.

On inspecting the drum membrane and external auditory canal in cases where a mastoid inflammation is present, you will observe a red inflamed drum with a perforation at some point. I have met only one exception. The posterior and superior walls of the external canal will be found sagging or projecting into the lumen of the canal sufficient almost at times to prevent inspection of the tympanic membrane. This swelling of the posterior and superior walls of the canal is pathognomonic of acute mastoid inflammation. Caries of the bone may be rapid or postponed, depending on the character of the infection. Middle ear and mastoid disease complicating or following influenza is likely to cause early destruction of bone. In fact, middle ear disease complicating the grip is perhaps the most dangerous type of infection we have to deal with in this locality.

Prognosis in mastoid inflammation is unfavorable in a large per cent. of cases if left to run its course. With proper treatment, however, in uncomplicated mastoid disease, the mortality should be nil.

I have had two deaths in fifteen operations. Brain complica-

tions, existing at the time of the operation, were the causes of death in both instances. My experience proves the statement made by Wendell C. Phillip that one may happen to operate just at the time when a serious intracranial complication is about to appear.

Thrombosis of the lateral and sigmoid sinuses with extension into the internal jugular vein is perhaps the most frequent intracranial complication of middle ear and mastoid inflammation. This complication more frequently follows mastoid and antrum suppuration than it does suppuration limited to the middle ear. The infection is carried into the sinus by the emissary mastoid vein, which empties directly into the sinus immediately behind the mastoid process; or the infection is propagated by the internal table becoming necrotic and perforating directly upon the wall of this venous channel. The symtomatology of uncomplicated sinus thrombosis is the most definite of any of the intracranial complications. The temperature is the most significant of the symptoms. Its rapid, fluctuating course marks its peculiar characteristic in this complication. It will suddenly rise to 103, 104 or 105 and as quickly decline to normal, or nearly so. This will be noted to take place several times in the 24 hours if observations are made at frequent intervals. The rise of temperature is often preceded by a chill. The wide and frequent changes in the temperature is due to septic material from the thrombus entering the general circulation. As the disease progresses these rapid changes in the temperature become more frequent.

A distinct chill is not as constant a symptom as the variable temperature, but may be noted only as chilly sensations. In postoperative mastoid cases with numerous temperature variations, these chilly sensations are quite as important as though a decided chill were present (McKernon).

Pulse.—When the temperature in sinus thrombosis is high, a corresponding rapidity of the pulse rate is noted—ranging from 120 to 170. Pain is more marked in sinus thrombosis than is usually observed in the simple mastoid cases, referred to the side of the head and occipital region.

If the thrombus has extended along the course of the lateral sinus, pain and tenderness on pressure will be present, but if the thrombus is confined to the sigmoid portion of the vein and a mastoid inflammation exists at the same time, the tenderness in this region, being so closely related to the mastoid area, can not be distinguished from simple mastoid tenderness.

If the case goes on indefinitely and the thrombus extends down the internal jugular vein, some claim that a cord-like feeling is perceptible to the tactile sense along the course of the vein. This, however, is denied by other equally as good authority.

If the course of the thrombosis has not been relieved by surgical intervention, the condition of the patient soon presents one of profound sepsis, with the dry, foul tongue, asthenia, diarrhea, rigors and sweats with the peculiar temperature fluctuations referred to above.

Extra-dural Abscess.—An abscess of this type may coexist with sinus thrombosis or may develop independent of other intracranial complications. When found complicating a septic thrombus, it has developed contemporaneously with a phlebitis of the sigmoid or lateral sinus. If, however, the extradural abscess is the primary and only intracranial complication, its usual location will be found corresponding to the epitympanic space—this location being the most favorable because of the thinness of the bone separating the attic of the tympanic cavity from the intracranial contents.

Bone necrosis of the tympanic roof and of the antrum is most likely to cause early perforation of the inner table in either of these locations with resulting extradural abscess formation. The abscess is of variable size and usually walled in by adhesions of the dura to the internal table of the skull surrounding the focus of infection and necrosis. In rare instances the perforation in the internal table through which the infection was carried to the dura may be of sufficient potency to allow drainage into the antrum or tympanum, in which event the abscess might give rise to only transient or unimportant symptoms. But nature, in her efforts to stay the progress of the disease, throws out barriers of granulation

tissue which blocks the drainage, with the natural result of pent-up pus with abscess formation of indefinite size. If drainage is not possible through the point of invasion, then the abscess, if limited at all, will be localized only by nature's method of forming adhesions between the dura and bone around the starting point of the infection. When this latter condition is present, there will follow an increase in the size of the abscess, which must eventually find drainage, either through the skull externally, or must break down the adhesions of the dura and fill the subdural space. If not relieved by surgical means, the latter course usually obtains and the patient succumbs to a purulent meningitis.

A similar localized meningitis may occur from the lodgment of an embolus or from thrombosis of a venous tributary, or often of one of the larger sinuses. From some reason the thrombus does not break down rapidly, but causes a subacute inflammation of the tissues enclosing it, so that when ulceration takes place there is no communication with the general cranial cavity (Dench).

Symptomatology.—The symptoms of an extradural collection of pus are not very definite. Severe headache, which is continuous, and a temperature ranging from 100 to 102 are the most prominent symptoms.

Tenderness on pressure over the affected area is usually present and is an important sign. "Localizing symptoms are absent, at the motor tract is not pressed upon at any point." Dench makes the distinction that, where the cerebellar fossa is the seat of the abscess, vertigo and vomiting may occur.

"Mental dulness is present in the later stages, which is due to increased intracranial pressure, or effusion into the ventricles."

The symptoms to be relied upon, however, are the temperature and headache. The temperature will be distinguished from that of sinus thrombosis by its limited, fluctuating course and lower degree, and from the subnormal type found in abscess of the cerebral substance. And tenderness on pressure must not be disregarded, as this will usually mark the location of the abscess.

Prognosis.—This is distinctly a surgical disease and if left alone

will in most every case prove fatal. However, cases rarely occur in which the outer table of the skull becomes necrotic, allowing evacuation of the pus and recovery. Knapp reports two such occurrences; but this method of relief is so remote that it would be criminal to rely upon such possibilities after a diagnosis of extradural abscess had been made. If left to run its course the abscess will either rupture into the general cranial cavity or into the brain substance, causing death.

Cerebral Abscess.—A collection of pus within the cerebral substance may follow or complicate any suppurative process in the middle ear or its accessory sinuses. It follows more frequently, however, in chronic suppurative disease of the ear than in the acute type. It may be either acute or chronic. The infection may be carried into the brain substance through the circulation or propagated along a small thrombosed vein; or complicate an extradural collection of pus. As stated above, cerebral abscess is more often observed complicating chronic otitis media, and it may be the only complication present, or may accompany sinus thrombosis or extradural abscess. I recall a case on which I operated for mastoid suppuration, where the patient afterwards died from a supposed abscess of the brain, but of which there were no symptoms at the time of the operation. The internal table was found necrotic over the sigmoid sinus and middle cranial fossa, and were removed, but the sinus and dura appeared healthy. The infection in this case was evidently carried to the cerebral substance through the circulation. The parents refused further operation and the patient died on the fourth day with classical symptoms of brain abscess. This was one of those cases which Phillip says we may operate upon just prior to the development of a serious intracranial complication.

Abscess of the cerebellum has the same etiology as that of the cerebrum, but occurs less frequently. "The process in both locations is brought about by diseased bone, and not when the primary inflammation is limited to the mucous membrane. In abscess of the brain of otitic origin, 9 per cent. result from acute otitis and 91 per cent. from the chronic type.

"The abscesses are usually found in the neighborhood of the diseased bone; 66 per cent. are located in the temporo-sphenoidal lobe over the tegmen tympani et mastoidei, 30 per cent. in the cerebellum near the sigmoid groove." (Von Bergmann). The records of the London ear clinic show that for suppuration in connection with the ear, from two to two and one-half per cent. suffer from abscess of the brain, sinus phlebitis or meningitis.

Symptoms in the beginning of this disease may be easily overlooked, being very mild or entirely absent. Later, however, as classified by Von Bergmann and others, you will note weakness, loss of appetite, foul tongue, pale or yellow color, as in all grave diseases, fever moderate or absent. Optic neuritis or choked disk is often present and is an important symptom. Cerebral and pressure symptoms are generally more prominent in cerebellar than in cerebral abscess. Headache is the earliest, most conspicuous and most constant symptom and usually referred to the location of the abscess, but may be in other regions, particularly in the occiput and forehead. Nausea and vomiting are almost always present, but are not characteristic. Dizziness and disturbance of equilibrium are frequent.

The prognosis in this complication of middle ear disease is most grave, and unless the abscess cavity can be drained, death must be the inevitable result.

In conclusion I desire to state that I have purposely, for fear of taxing your patience, left out of consideration some other important complications of this disease; but if anything I have said upon the subject should prove to be of the least assistance to you in the observation of this class of cases, the paper will have served its purpose.

THE CONSERVATIVE TREATMENT OF MASTOIDITIS.

BY J. L. MASTERS, M. D., OF INDIANAPOLIS.

In a noted medical college in an eastern city two professors of otology were accustomed to appear before the class each year and express themselves upon the subject of mastoiditis as follows: Dr. A., after puffing himself up with pride, would state he had successfully treated one hundred cases of mastoiditis and had found it necessary to operate in only two. Dr. B. soon after appeared only to state that he had operated on fifty of the last one hundred mastoid cases he had seen. Each seemed to take especial pride in his ability. Each was strong in the belief that he had done the proper thing. Each represented a type of otoligist. Dr. A. was an extreme conservative. Dr. B. was an extreme radical. It is never hard for either of the above types to decide what to do in mastoiditis. If in doubt what to do Dr. A. would always wait for positive and unmistakeable signs for an operation. If in doubt Dr. B. would always operate. To the careful, conscientious otologist the plan of action is often not so plain as it is to either of the extremes here mentioned. To him who is willing and anxious to operate when the best interest of his patient can be conserved by so doing, or who would willingly wait when delay is best, the proper handling of mastoid cases becomes more than an opportunity to operate or a bugbear to scare the timid.

If we analyze the situation with reference to Drs. A. and B. we are forced to the conclusion that Dr. A. was woefully negligent in performing his duty in an operative way or Dr. B. was needlessly subjecting his patients to the risks which attend every major surgical operation. It can hardly be conceived, that, with patients subject to the same climatic conditions, the same environments, and, perchance, the same diseases, that one doctor would have only two cases out of a hundred that would need operation

while the other would have fifty. I do not doubt for a moment but that each was perfectly conscientious in his action and that each felt he was justified by the results in what he did.

If we could know the truth it might be that Dr. A.'s patients had a little longer period of doubt about the recovery than Dr. B.'s, but they were free from the anxiety and shock of the operation and escaped the scar.

At this point it is well for us to look into the nature of a mastoid inflammation. The mastoid process is a part of the middle ear and usually participates, in some degree, in every inflammation of it, and in every purulent inflammation of the middle ear there is apt to be found pus in the mastoid cells. Politzer says, Diseases of the Ear: "The author has proved, by numerous *post mortem* examinations that in every acute middle ear suppuration pus is found in the cells of the mastoid process." Bacon says, Manual of Otology, page 298: "It is probable that in almost all cases of acute otitis media the mucous lining of the mastoid cells is simultaneously involved." Knap in American Text Book Eye, Ear, Nose and Throat, page 749, says: "Pathological research, as well as clinical observation, demonstrates that inflammation of the tympanic cavity, as a rule, extends more or less to the mastoid process." Ingalls in Diseases of Ear, Nose and Throat, page 171, says: "In every case of purulent otitis media there is, in all probability, an attendant empyema of the so-called mastoid antrum." Hollinger in Illinois Medical Journal for February, 1906, says: "In acute inflammation of the middle ear, an isolated inflammation of the membrana tympani or acute myringitis hardly exists, but the mucous membrane of the drum cavity and of the mastoid cells is always implicated. Pus may gather in the cells and disappear without ever causing any symptoms."

This does not mean, however, that there is an abscess of the mastoid bone. Ordinarily, so long as the mastoid cells communicate freely with the mastoid antrum and it, in turn, communicates freely with the tympanic cavity, abscess of the mastoid process does not occur. On the other hand, when the communications between the various cells and between the cells and antrum are

narrow, the swelling of the mucous membrane occludes the passages. Then, if the proper infective agent has found entrance, necrotic processes are established which terminate in an abscess of the mastoid process. Usually the abscess becomes so urgent in its demands for the evacuation of its contents that the pus finds exit in the direction of least resistance, viz., into the tympanum or externally through the cortex or, failing in this, into the cerebral cavity. But a mastoid abscess associated with destruction of bony tissue may heal without spontaneous evacuation of pus or surgical interference. This is proven in those cases which refuse an operation and in which all symptoms pass away; in those cases in which we operate after long continued symptoms of mastoid inflammation with tenderness, only to find the bony partitions between the cells absorbed and the spaces filled with healthy granulations but without pus.

It is also proven by the fact that until recently the mastoid operation was seldom done and yet death was very rare considering the number of mastoid inflammations.

Bacon, Manual of Otology, page 299, says: "Of twenty cases that came under my observation recently in private practice, all had acute otitis media. In seventeen there was acute inflammation of the mastoid cells, and in seven it was necessary to open the mastoid process. In ten, recovery took place without operation. Of these, the drumhead was punctured in six cases. In one of them, viz., that of an infant, sereval months old, in whom alarming symptoms developed suddenly, suggesting a meningeal complication, puncture of the drumhead gave speedy and marked relief." Of these seventeen cases about 59 per cent. recovered without operation. From the foregoing statements as to the prevalence of mastoiditis in acute purulent otitis media and its tendency to recover, we must believe that it was perhaps present in many cases of chronic purulent inflammation of the middle ear when they were in their acute stages. Chronic otitis media formerly contributed the larger share of mastoid cases and some claim that it does so now. Chronic pus discharge from the ear may continue through a space of time covering many years and give

to the patient no greater inconvenience than that of having a dirty, offensive discharge, which upon some slight provocation, such as a cold or other intercurrent disease, may become acute and the mastoid process may be the seat of an abscess. Such a change is usually due to the entrance from without of some pyrogenic germs. The conditions within the ear, however, are usually such as to favor such invasion. We always have at least a swollen and succulent mucous membrane within the tympanum, more often granulations or polypii or necrotic areas of bone or cholesteatoma. Any or all of these may be found and each one easily becomes a nidus for the pneumococci, streptococci or staphylococci which enter the tympanum and antrum. If we could always be sure that the mastoid process had been in a perfectly quiet and healthy state until the acute exacerbation set in, we could feel less apprehensive about the resulting mastoiditis. But, truth to tell, we know that only too often the chronic otorrhea is due, in part, to a chronic inflammation or necrosis within the mastoid process. In such a state we can not expect a cure from any sort of palliative treatment and the most conservative thing to do is to operate early and radically.

I almost feared to present a paper of this title before this Association lest my position might be misunderstood. Be it far from me to taboo the mastoid operation as it is done all over the world today. It has a place in otology as the operation for appendicitis has in abdominal surgery. The one is just as necessary as the other and often the only *conservative* thing to do is to operate, and do it quickly. But as many abdominal sections were made in the past which would not be made now, so I am sure I have seen mastoid operations done which, in the light of a more perfect knowledge, would not be done. It is the object of the essayist, not to deter any one from doing the mastoid operation when necessary, but rather to help all to a fuller comprehension of the subject of mastoiditis from the patient's as well as the doctor's standpoint. We depend for our diagnosis of a mastoid inflammation upon certain symptoms. First of all is its association with a purulent inflammation of the middle ear.

The three symptoms which are present in nearly every case of mastoiditis are pain over the mastoid, spontaneous and upon pressure, bulging of the membrana tympani with depression of the superior posterior inner extremity of the auditory canal, and a rise of temperature. In addition to these may be mentioned swelling and redness of the tissue behind the ear which may occur in children or when the superficial cells and periosteum are the seat of inflammation; insomnia, which I consider a valuable symptom; a general feeling of malaise out of proportion to the febrile disturbance, perhaps, headache, dizziness and tinitis. Pain is usually present in every acute mastoid inflammation and becomes more intense as the disease progresses. In chronic mastoiditis it may be so slight as to be entirely overlooked or it may be absent altogether. When present it is greatest over the mastoid process, extending over the corresponding side of the head.

Bulging of the drumhead and sagging of the posterior superior part of the canal are rather constant symptoms when the greatest amount of inflammation is in or close to the mastoid antrum and when the perforation in the membrana tympani is small and the drainage is bad. But I have seen many mastoid cases in which there was no sagging of the canal.

One symptom which I have found constantly present is some disturbance of the temperature. This may vary from a temperature but little above normal, say 99½, or it may reach 104 or 105 degrees in children. If the temperature be low we should not permit ourselves to be misled and exclude mastoiditis. We should always insist on the temperature being taken at short intervals so that early signs of complications may be noted. Another symptom upon which much stress is laid is tenderness upon pressure over the mastoid process. This is usually greatest over the mastoid antrum or over the tip. When present it is a symptom of value, but when the inflammation involves the deeper structure or is in a diploetic or compact mastoid it may be absent altogether.

In chronic mastoditis the inflammatory process may run its entire course without local symptoms. In such cases we must make our diagnosis from general conditions. In a chronic otitis

media with profuse, foul-smelling discharge that is thin and yellowish in color, associated with granulations, cholesteatoma, polypii or necrosis, in a patient who is a little below par, often with some neurosis, as violent periodical headaches, insomnia at times, perhaps lack of power to concentrate the mind, irritable temper, etc., we are justified in expecting to find the mastoid cells involved when we operate. Taking into consideration the fact that the mastoid process is involved, to some degree, in every case of acute purulent inflammation of the middle ear and also that this involvment is proportionately greater when the drainage is poor, and septic invasion is easiest, or, that it is induced by improper treatment, it is evident that the conservative treatment of mastoiditis should commence before there are any symptoms of mastoid involvment.

Ingalls makes this statement: "Regarding the etiology of acute mastoiditis consecutive to acute otitis media, I would say that as I have never seen acute consecutive mastoiditis in a case I have treated from the outset of the acute otitis media, I can not regard any case of acute consecutive mastoiditis as a necessary result."

He believes that the mastoid becomes involved through the method of treatment and that forcible irrigation or the use of peroxide of hydrogen force the pus into the mastoid antrum or possibly the mastoid cells and thus set up a mastoiditis. Knapp says: "Some modes of treatment may produce mastoiditis, viz., violent inflation, the nasal douche, forcible syringing, operations in the nose and nasopharynx."

I operated on a case some time ago in which I am sure the trouble was caused by inflation during an acute purulent inflammation of the middle ear. Too much meddling with an acutely inflamed ear by probing or washing often prepares the way for the entrance of germs which may later produce a mastoiditis.

When pus has once formed in the middle ear the first effort should be to see that there is free drainage. It is never wise to permit the membrana tympani to rupture spontaneously, for by so dong the period of suffering is prolonged, the destruction of the drumhead may be greater and the drainage may not be free on ac-

count of the size or location of the opening. Early and adequate incising of the drumhead will materially shorten the duration of acute purulent inflammation of the middle ear and will often prevent the mastoid complication. When a large opening is secured the position of the patient in bed, if confined there, should be such as to favor drainage. When the position is on the back the pus from the tympanum flows into the antrum, which is above and behind it, by the natural force of gravtiy, and when once in the mastoid antrum is prone to enter the cells, become shut off from the antrum and form an abscess. So decubitus in acute otitis media should always be such that the pus will drain away from rather than into the antrum. The patient should lie with the affected side on the pillow with the face turned downward toward the bed.

Otitis media in diphtheria, scarlet fever and grip is more apt to be followed by mastoiditis than in other diseases, hence we should be especially careful about securing free drainage early in these cases.

The opening should be large, extending from top to bottom of the drumhead. The tympanum perforators which were formerly used have given way to the small curved bistoury. With the former it was customary to simply make a puncture; with the latter a free incision is made. When a free opening is secured nothing should be done to retard the outflow of pus. If there is pain caused by swelling or retained pus, the ear should be very gently irrigated with hot sterile water or 1.10,000 bichloride solution once or twice a day. Then the concha should have a piece of loose cotton placed in it to take up the pus as it runs out. This should be changed as often as need be. If, in spite of the above precautions, a mastoid inflammation supervenes we must renew our efforts to secure still better drainage and abort the inflammation.

I am in the habit of making a free incision from bottom to top of the membrana and outward along the superior posterior portion of the auditory canal to the junction of the bony and cartilaginous walls. The bistoury is introduced until the point touches the

promintory on the inner wall of the tympanum so that the mucous folds and swollen tissue is all cut through down to the bone. At the same time a number of leeches, from two to six, are applied over the mastoid process. After free bleeding, usually until the blood stops of its own accord, an ice pack is placed over the mastoid and kept there for 24 hours. The patient is kept absolutely quiet in bed in the position before described. The ear is irrigated with hot solutions and a saline is administered. The statement is made by some authorities that the ice pack will mask the symptoms and so mislead us as to the real condition of affairs. I have not found this to be true, but, on the other hand I consider the ice pack has a true diagnostic significance. When the inflammation is acute the pack is grateful and soothing, but as soon as the inflammation subsides it is unbearable because of the pain that the intense cold produces.

You will notice that all these measures have two objects in view, viz., to promote drainage and to reduce the inflammation with its attendant swelling and congestion of the lining membrane of the cells and antrum, and by so doing favor the discharge of pus that may be retained in them. I have seen these results follow so promptly so many times in acute inflammation of the mastoid cells that I would feel I had come far short of my duty, did I not first try to abort a mastoid inflammation.

If the treatment above described is successful the constant, distressing pain behind the ear will diminish, the swelling and redness, if present, will disappear, the tenderness on pressure will be less pronounced, and above all, the discharge from the middle ear which had grown less or almost ceased, will be re-established. If these conditions follow we are safe in waiting before an operation is considered. One who considers every case of mastoiditis as essentially surgical will operate on every case early, and such otologists always end their descriptions of the operation with the statement that pus was found in the mastoid cells. Of course pus was found in the cells, for has it not been said that the most careful otologists of the world have shown that pus is present in the mastoid cells of almost every case of acute otitis media puru-

lent? But the fact that pus is present in the mastoid cells is not sufficient excuse for having done a mastoid operation. We must have pus in the mastoid cells that can't get out through the natural channel, an inflammation which will not yield to milder means and which has a tendency to grow worse rather than better before we should operate. If, in spite of antiphlogistic measures an acute mastoiditis does not *improve* in 24 or 36 hours the mastoid cells should be opened, and opened thoroughly, so that every vestige of diseased tissue is removed.

If time permitted I could cite a number of cases of acute mastoiditis that I had treated in the above way with speedy and perfect recovery within the past few months. I give the history of the following case in his own words, somewhat condensed by me. Mr. E. R. S., aet. 40 (?) was taken sick with the grip January 12, 1905. Exposure in an open car increased the trouble so that pneumonia was feared. January 14, he had severe pain in the right ear which rapidly developed into an acute purulent otitis media. His family physician lanced the ear and the discharge was excessive. Pain over the mastoid was soon present but subsided somewhat in ten days although the discharge kept up. Late in February he was compelled to make a business trip to Milwaukee. While there the ear trouble became worse and the drum was lanced again. Greater soreness developed in the mastoid region. He became very nervous and slept but little. The middle of March he started for Indianapolis, but was compelled to leave the train at Lafayette and stay over night. He began to have chills, which he called nervous chills. When he reached Indianapolis his suffering "was well nigh intolerable." The region of the mastoid was much swollen and the ear was so sore he could not touch it without great pain. His family physician was called and applied iodine freely over the mastoid which blistered the skin. The next day he consulted an otologist who pronounced it a fully developed case of mastoiditis and declared an immediate operation necessary.

The next day, March 17, he came to see me at my office. He had the appearance of a man who had suffered greatly. His

head was tilted to one side much as we see it in Bezold's mastoiditis. He had a pale, sallow complexion with heavy, dull expression. Examination showed the region of the mastoid greatly swollen and blistered. Beneath the tender superficial blister there was well marked deep tenderness over the whole mastoid reigon. The discharge of pus from the ear was very scanty. The auditory canal was much narrowed by the drooping of the inner half of the posterior superior auditory wall. The drumhead was bulged with a nipple-like projection through which exuded a drop of pulsating pus. The temperature was 100; pulse 80. No more headache than should be present from the mastoid region. Tongue coated with a moist white fur. So far as I could make out there were no intracranial complications and so no *very* urgent symptoms for an operation. I decided a delay of 24 hours would not add greatly to his chances of recovery, and since abortive treatment had not been resorted to and drainage was extremely poor, I decided to see what we could do for him for 24 hours with antiphlogistics and drainage.

A free incision entirely through the membrana and auditory canal was followed by six leeches, ice pack, rest in bed and an active purge. Instructions were given him to call me by 'phone in the morning if he did not feel able to come to see me. Much to my surprise he was the first patient in my office next morning, with the history of having spent a good night, having slept eight hours. The spontaneous pain behind the ear was better and the discharge from the ear was profuse. He was ordered back to bed with continuance of ice pack for another 24 hours. Another good night, freedom from pain, no temperature, free discharge and clean tongue made me feel the case was progressing favorably. Except rest in bed and proper cleansing of the ear nothing more was done in this case. In eight days all symptoms of the mastoid trouble, including the discharge from the middle ear, had ceased. In ten days he started for Florida, where he rested for two weeks. Since that time he has had the ear inflated a few times and the hearing is practically normal and the ear is free from all signs of the former violent inflammation.

This case illustrates the course of a number I have seen within the past few months.

While we are justified in the line of treatment outlined in mastoid troubles following or associated with acute otitis media, our action in the handling of mastoiditis arising in the course of chronic purulent otitis media should be very different. In every case of chronic otorrhea we should fear mastoiditis with some form of intracranial complication. No patient with a chronic otorrhea is safe, and life insurance companies rightly consider all such patients bad risks. A great error exists in the expectation of getting some manifest symptoms of a mastoid inflammation before expecting intracranial disease. Too often there are no symptoms of mastoid involvement before we are confronted with a sinus thrombosis, cerebral or cerebellar abscess, extradural abscess or meningitis, and perhaps at a time when operation is unavailing. In any case of chronic otorrhea, the temperature should be carefully watched, the pulse often counted, headache given careful considertion, nervousness, sleeplessness, fulness of the head and other nervous manifestations, looked upon with apprehension. Often some one of the above symptoms is the first sign of intracranial involvement and should be dealt with in no uncertain way. At such a time operation will often show a mastoid bone that is almost entirely destroyed by necrosis, with perhaps a bared sinus, an exposed dura or local pus accumulations within the cranium. In conclusion I desire to say that my idea of conservative treatment is not a do-nothing policy, but a do-*something* policy, and do it early. Treat a mastoid involvement early with the means which are adequate at an early date, as a man would quench fire in the beginning with a bucket of water, instead of calling out the whole fire department when the roof is falling in. In mastoiditis or other complications of chronic otorrhea the most conservative thing one can do is to operate early, operate thoroughly and operate radically.

DISCUSSION OF PAPERS OF DRS. LAYMAN, WHITLEDGE AND MASTERS.

Dr. T. F. Page, of Indianapolis: These papers were evidently written for the benefit of the general practitioner. The papers are important, and I think whenever a paper is written on this subject and a death rate and mortality is associated therewith, it should be printed in large figures where it will be seen. With such a short time for the discussion it is very hard to tell what phase of the subject to take up, but I suppose diagnosis is the most important topic to consider. The first paper devotes much time to the diagnosis, and it is very well that it should. On account of the number of cases of scarlet fever and measles during the past winter, I had occasion to note the great importance of care in making a thorough examination of the conditions of the middle ear. In children the conditions of the drum are easy to be overlooked when simply a hurried examination is made. There are many cases where the pathological appearance is so obscure that we are likely to overlook serious conditions that may exist in the middle ear. It is also important that we should cleanse the canal and the drum in order to get a perfect view of the field. We often find, after removing the white epithelium from the drum there are various conditions existing in the middle ear. The next thing is that we should thoroughly differentiate between the catarrhal form and the purulent form. This is not always possible, but there are certain cases where we can do so. Before any discharge has been established we find in the purulent form a bulging of the upper portion of the drum, and this may be easily overlooked by the unskilled on making an examination, when there is slight attention given to it. The upper part of the canal is not seen in children until the head is turned properly and the ear is drawn downward and backward. In the catarrhal form, which is confined to the lower part of the middle ear, we find a very characteristic condition. I shall not take time to describe certain appearances of the drum which enable us to differentiate to a certain extent between the purulent form and the catarrhal form. We get the case after the discharge has been established, and the character of the discharge enables us to differentiate one form from the other; but I have come to like the mi-

croscopic examination of the discharge in making differential diagnosis.

Dr. J. J. Kyle, of Indianapolis: It is unfortunate that we do not have typical symptoms of mastoid inflammation following a chronic inflammation of the middle ear, but one symptom that has impressed me more than any other is that of the rise of temperature as described by Dr. Masters. During the winter I have been fortunate in avoiding two cases of acute mastoiditis following an acute inflammation of the middle ear, and I did this by hot applications. I do not remember the number of cases that I have had under observation, but these were two typical cases in which there were typical symptoms of heat, redness, swelling and tenderness of this region. One was a child three years of age, and the other was a man forty-five years of age. I presume that my experiences in observing the sequel of acute inflammation of the middle ear are probably quite the same as those of any other otologist, and while I listened to the second paper I noted some few important cases that have come under my observation during the winter. The first was a case of diphtheria with a mixed infection involving the mastoid process. The second a Bezold abscess. The third endocarditis of the lungs, followed by death. Fourth, localized meningitis. This one made a complete recovery. He was delirious for two weeks and his temperature ran as high as 105 degrees. The next was a tuburcular one following pulmonary tuberculosis. This man will die shortly from other complications. These are some of the interesting cases demonstrating some of the unfortunate sequela that may follow inflammation of the middle ear.

I was very much interested in all of the papers and think they are a credit to the Association.

Dr. David Stevenson, of Richmond: These have been splendid papers. I think in our operations we should try at least to do the simpler ones first. In our large clinics they will not do that, but take the radical operation first. The incision of the drum membrane is the simplest operation, and I think we can often do a great deal of good with it. I think ossiculectomy is the coming

operation. I think there will be ten ossiculectomies to one mastoid operation in the future, and the earlier they are done the better. This often prevents entering the skull, which most patients dread.

The third is simply opening the mastoid, and by that I do not mean Whiting's operation, for it is a tremendous operation in some cases and I am sure that there are a number of good surgeons that disagree with me. I believe if you open the antrum in a great many cases, 90 per cent. under ordinary circumstances, except where a large operation is indicated, will get well very much quicker and faster. It is well enough to make the wound as small as possible and merely let the pus out; one will be surprised in how many cases one will not have to remove the mastoid. The little sinus will almost join in a great many of these cells, but there is no necessity to take them out. They will often heal quicker.

The fourth operation is Whiting's.

The fifth is the radical operation. I would rather do all five than to perform the radical first. I think it is a great mistake in a majority of cases to do it first. You do not want any more of a scar than is absolutely necessary. I might mention one case which I have at the present time, that of an old lady who had been operated on for polypi, and during her stay in the hospital hadn't washed out her nose apparently, so that some pus was carried to the tip of the mastoid. There was no symptom in the middle ear and the drum was the last to indicate it. We went ahead and opened the mastoid. At this time there was some swelling in the back of the ear and in the neck. I did not think there was any connection, but the second day after the operation, to my surprise, the pus came out through the antrum. I wondered where it came from; it certainly did not come from the cells, but poured right out of the antrum.

Dr. L. C. Cline, of Indianapolis: These papers are very important, and I am sorry they came at the time they did, just as we are closing this session, because these are certainly very important subjects, and ones that are very much neglected. It is

impossible for me, or anyone, to attempt to discuss all of these papers in the time at my disposal, or even to touch on their points. There are a few things to which I wish to refer, however. One is that they are all first-class papers, which will do us good to think about and study.

There is much difference of opinion in the operative procedure in these cases. Some doctors have the idea that every case that comes along of four or five weeks' standing, must be operated on. Now this depends upon the pathology and our knowledge of the case. If we can diagnose our case and determine what the pathological conditions are, or what has taken place, we are capable of saying what to do; otherwise, we are not, and sometimes it is best to treat the case palliatively and we will often save an operation.

As Dr. Masters has said, the most conservative thing to do is to operate at once without delay; but then we must know all about the case and take its history into consideration, also the general condition of the patient and the surroundings if we make a correct diagnosis. I fear that some men get the radical fever into their head and want to operate on everything they see and in this way they often make a great many mistakes. In many cases a simple operation will not do any good, and we will get into trouble. We will get ourselves into disrepute and also the profession if we attempt to handle cases in this way. When a case needs a radical operation a simple hole made through the antrum will not relieve that part. Neither is an operation through the tympanic cavity going to relieve those cases. All that is required in these simple operations is to drain the parts, and in many cases we can save our patient a great deal of trouble. We can simply drain the tympanic cavity in another direction, in many cases possibly restoring the defective hearing, and saving much suffering. The wound will close up and it is an entirely safe operation. As Dr. Stevenson has said, if we will do the simple operation, it need not be a very large opening, we may not need to chisel out the skull.

Dr. Shultz: This paper and the others should have been read

before the whole Association, and not before such a small portion as is here today.

I do not think it is always right to make the simple operation first, but I think Dr. Masters was right when he said that we should first take intermediate steps. So many of these cases, in fact a large majority, can be overcome and stopped by an ordinary operation. Some of these cases of otorrhea can be stopped in children in three or four days, but you can not make the general practitioner believe it until you take him to the case and show him, so that he can see for himself. I have taken four or five and educated them as to my methods.

As one speaker said, I do not believe in a physician washing out an ear with an ordinary syringe that you buy at the drug store. Such irrigation does not reach the seat of the disease and in this way you force the pus into places where it does more injury than good. I like to use gauze in these cases, whether in children or in adults, and I find it much more satisfactory. I also find that it prevents infection.

Dr. Kyle: I want to take positive issue with Dr. Stevenson in regard to simply opening the antrum. I can understand a case wherein it would be all right, but ordinarily I would not agree with this method.

Dr. Layman (closing): I can hardly refrain from making some remarks upon the papers read in connection with my paper, even though closing the discussion of my own paper. I agree with Dr. Masters, that the presence of pus in the antrum is not necessarily an indication of mastoid inflammation. The important points to consider in this connection are the indications for operating in acute mastoiditis. Dr. Philip D. Kerrison's article on this subject in a recent number of the "Annals of Otology, Rhinology and Laryngology" admirably covers the ground on this point. For those who have not read it, I wish to repeat what he says of the indications for operating in acute mastoiditis:

1. Sudden cessation of the aural discharge, other symptoms persisting, accompanied by deep-seated pain in the mastoid region

and marked sensitiveness to pressure upon the mastoid over an area extending well beyond the limits of the antrum.

2. In the absence of fever, the above symptoms unless yielding promptly, in 24 to 48 hours, to abortive measures.

3. Marked tenderness over the antrum, 4 or 5 days after free incision of sheapuells membrane.

4. Marked variations in quantity of pus discharged; large amount; too great for tympanic lesions; diminution or cessation + mastoid pain or tenderness.

5. Mastoid tenderness having disappeared; discharge persists, resists all rational non-operative measures.

6. Evidences of mastoid involvement having been present + symptoms of septic absorption during convalescence.

With regard to my paper I wish to make one or two remarks. Since bacteriological examination of aural discharge has been discussed, I wish to emphasize that the important thing to remember is that a bacteriological examination of the discharge is of significance only in that it points to the characteristic infection; because it has been demonstrated in severe cases, clinically speaking, that the discharge shows in some the streptococci, while in others only the milder pus germs. In regard to the dry method of treatment (the strip of gauze drainage referred to by Dr. Shultz) I think that in employing such a method it is essential that the otologist see the patient every day, yes, sometimes twice a day, for there may occur a sudden daming up, as it were, causing serious symptoms to develop in less than 24 hours.

I regret that lack of time cut short the paper, especially that part touching upon the different methods of operative treatment, namely, simple operations through the meatus and the more formidable procedure, commonly known as the radical.

Dr. Whitledge: I haven't very much to say in closing. I was sorry when I found that my paper was to be read before the surgical section, for it was intended for the medical section or general practitioners. I did not try to bring up anything new in the treatment. I am glad that the discussion has been as extensive as it has, and I wish to say I am in favor of the conservative treat-

ment in acute mastoid inflammations. I believe I have avoided two or three mastoid operations within the last two or three weeks by conservative treatment of the middle ear infections; and by doing thorough work early, as soon as I was consulted, which fortunately in the few I have mentioned was early in the case, within twenty-four hours possibly. But I can not agree with Dr. Stevenson in what he has to say. I think when you have a diseased condition of the mastoid and you want to open it, that the work must be done thoroughly, otherwise there is no question but that secondary operations will be necessary. I have had one such experience within my time, and I am quite sure it was a good lesson for me. When you have occasion to open the mastoid I think it should be done thoroughly by removing all of the cells, and when you have done this there is not likely to be reinfection.

Dr. Masters: I will say that when I prepared this paper I did not try to present anything new upon the subject. I simply wanted to emphasize the principles of what have been advocated by different authorities for a great many years. The cases of trouble in the membrana tympanum were not treated correctly for a great many years, for there seemed to be a general principle for all cases, and unfortunately this would not apply to every case, for in chronic cases it is only wasting time.

I feel compelled to make a statement in regard to Dr. Stevenson's method of first doing the simple work, and so on up the scale to the extreme operation, until all of them have been tried, rather than use the radical method first. He would employ the five rather than use the fifth first. The situation is this: If you have a chronic trouble, and are positive of just what you have, then you know just what it will take to relieve it; but as I have stated in my paper, if you operate you must operate thoroughly; and by that I mean that you must remove every particle of this tissue, and be sure that you have done this. If you punch a hole in the diseased tissue and expect nature to do the work which you have indicated you must be disappointed.

There is much that might be said upon this subject, but as the time is growing so late I will not say any more now.

CONSTIPATION.

BY BERNA C. FRY, M. D., OF INDIANAPOLIS.

It is with much temerity that I present for your hearing a paper on a subject that has been so exhaustively written as constipation without offering you something new or radically different to the old established line of treatment.

It has always appeared to me that this class of cases does not receive as much consideration from physicians as their importance deserves; too frequently are they turned away with a prescription for a pill or other laxative with no special directions as to diet, habits, etc., without a thorough examination into the possible local conditions which so many times are the cause, as well as frequently the result, of chronic constipation.

If this review will result in a discussion of the subject that will be of benefit to this large class of sufferers I shall feel well paid for my effort.

Constipation, excepting possibly indigestion, is the most frequent complaint with which the patient comes to the physician. The subject is of interest to the internest and the surgeon alike; the internest encountering it in the daily routine of his labor, while the surgeon no less frequently meets with it in the many cases presenting other symptoms demanding surgical skill for relief.

The time allowed is too limited for me to enter into a discussion of the subject in all of its phases, so I will confine myself to some of the more important causes and their treatment.

For clinical purposes I have divided the causes of constipation into, 1st, causes due to diet; 2d, causes due to the surrounding conditions governing the patient; 3d, diseased condition in the sphincter muscle and surrounding region; and 4th, atony of the muscular coats of the bowel.

In various cases one or more of these causes will be responsible for the condition. Sometimes one cause will produce the condition of constipation and have grafted on that one of the other causes, then the two continue of equal importance as causative factors and in reference to treatment.

To illustrate: Frequently some abnormal condition of the spinchter will cause the patient so much pain that the sphincter will become contracted and he will avoid bowel movements for days at a time, thus bringing about the constipated habit. Or a patient becomes constipated as the result of improper diet or irregular habits and then atony of the bowel will often follow, the two causes then being of equal importance as to treatment.

In the female sex the patient is more often the victim of her surroundings and diet, while in men, though the foregoing are often causes, the abnormal conditions of the sphincter muscle and surrounding region are more frequently found than in women.

Under dietary conditions come, first, improper food; concentrated food, rich in nutrition and leaving little or no residual material in the bowel to excite peristaltic movements. It is the experience of all of us that these patients diet principally on meats or animal foods in preference to the vegetable.

Then, too, we have the "breakfast food" fiend, who makes one or two and sometimes three meals a day on one or more of the many such foods now on the market, under the happy delusion that he is eating a concentrated, easily digested or predigested food that is saving his stomach much of its work and at the same time supplying his system with all that his body needs, while, in fact, there is very little nourishment in any of the "breakfast foods"—rolled oats included. This class of foods depends upon the cream and sugar taken with them for about all the nourishment they carry into the body, and I am inclined to believe that a very small part of the original spoonful of breakfast food which you had before soaking the eighty or eighty-five per cent. of water into it ever does digest. Dr. Mathews, of Louisville, has reported a case of impaction and death in a man who had lived for three weeks on oatmeal alone. Evidently in this case all of it did not digest.

Many of these patients are fond of eating sweetmeats and pastries of all kinds instead of food that leaves more in the bowel. These pastries, sweetmeats and candies are more potent causes for evil through the resulting faulty digestion produced.

Insufficiently masticated food occasionally leads to a constipated habit through the interference with the digestive processes. Eating at irregular intervals is also an occasional cause, by throwing out of balance the normal equilibrium of peristaltic movements.

The surroundings of the patient which causes constipation to be produced: Under this might be mentioned inconvenient and inadequate closets in factories, shops, stores, etc. Modesty often prevents the young girl who has just reached the age of puberty from attending the calls of nature if she is in the classroom at such times.

In this class comes that of occupation: Those whose occupation affords limited exercise; or one whose occupation demands close attention to duty so that he can not leave his task to go to the closet at any time nature may demand.

Abnormal conditions in the external sphincter muscle plays a much more frequent part in causing constipation than has been generally recognized. This muscle is an involuntary one, but possesses a slight voluntary control directly and indirectly when in the normal condition. The only direct voluntary control of the muscle is that of contraction when assisted by other muscles of the perineal group. It possesses an indirect voluntary control in dilating or relaxing through the force of the diaphram and abdominal muscles.

When the fecal mass approaches the internal sphincter the impression is carried to the external sphincter and if permitted the external muscle relaxes to allow the fecal mass to pass. When it is not convenient for the bowel to move and the sphincter is not allowed to relax the fecal mass acts as an irritant to the external muscle until the mass is lifted back into the sigmoid, to be again carried down against the external sphincter with the next peristal-

tite wave. This process being repeated until the evacuation has taken place.

Persons who, for any reason, refuse to answer the calls of nature subject the external sphincter to this irritation, which will eventually result in a chronic contraction of the muscle.

On account of the intimate relation of the nerves in the sphincter and surrounding region, diseased conditions in this region will irritate the muscle, and, when long continued, cause firm contraction of the muscle as by the descent of feces.

In this way is the contraction caused by an irritable spot within the rectum which has been denuded of its epithelium; by an ulcer within the rectum; a fistula with opening within the rectum or close to the sphincter without; anal exzema, pruritis ani, irritating vaginal discharges, as well as more remote irritations along the genitourinary tract.

The contraction of the sphincter caused by an anal fissure or irritable ulcer is probably the most striking and most frequent example of this class. No other condition in this region causes so much pain where there is so small a lesion.

These fissures are produced sometimes by very slight causes: By the passage of hard, dry feces; by the insertion of foreign bodies into the rectum; by the use of hard, rough detergent material coming in contact with the delicate mucous membrane overlying the sphincter causing an abrasion, thus exposing the sensitive nerve filaments underlying. These exposed nerves cause intense pain which results in a contracted sphincter muscle.

All of these local irritations when existing for some time result in a chronic contraction or hypertrophied condition of the sphincter muscle.

When the external sphincter muscle becomes hypertrophied or contracted it prevents free evacuation by obstructing the anal outlet and this obstruction has to be overcome by increased force of the diaphragm and abdominal muscles.

This rigid contraction of the sphincter muscle, with resulting distention of the sigmoid and rectum, eventually results in atony of the muscular coats of the bowel.

Atony of the bowel may be either the cause or the result of constipation, and usually indicates a chronic condition. It is the result of such causes as dull the sensibility of the nerves or causes that produce a relaxation or stretching of the muscular walls of the bowel, or both.

Any obstruction at the anal exit, a fissure or any irritation around the sphincter interfering with normal bowel movements may lead to atony by the stretching of the muscular walls of the bowel from the accumulation of feces.

Digestive disturbances by altering the contents of the bowel, local inflammations and congestions along the lower bowel, causing the liquid portion of the bowel contents to be absorbed, leaving the feces dry and hard, lead to a loss of tone of the musculature of the bowel. Simply neglecting the evacuation of the bowel day after day results in the same condition.

When once this condition of atony of the bowel exists the constipated habit readily follows and will continue until the bowel has regained its tone.

From what has been said it will be seen that most causes of constipation are localized in the lower part of the bowel. Thus treatment will need be directed to these local conditions. In other words, a great part of the treatment will need to be local, but local treatment will always need to be supplemented by general treatment.

In cases due to some irritable condition in the region of the sphincter the muscle will be rigidly contracted or hypertrophied, thus forming a serious obstacle to evacuation. In this class of cases treatment will need to be directed first to the irritation, but in such cases as have existed long the contracted muscle will require to be freely divulsed before the bowel will be able to evacuate itself naturally.

A few words in reference to divulsion of the external sphincter muscle might not be out of place here. The operation is not a formidable one. It is not necessary to give ether or chloroform when nothing more than divulsion is required. The operation requires only three to five minutes and can be done under nitrous oxide gas without pain or danger to the patient.

I do not want to be understood as advocating divulsion of the external sphincter muscle indiscriminately, as some are doing at the present time. When the muscle is in a state of chronic contraction caused by the long-continued irritation of any of the before-mentioned causes it becomes hypertrophied and by the divulsion the muscular fibers are stretched and individual fibers are no doubt broken, but the muscle itself should not be stretched until it is entirely broken.

Divulsion properly performed weakens the muscle and breaks down this obstruction which interferes with evacuation.

In cases in which there is a fissure or irritable ulcer at the anal outlet stretching does even more than this. The unhealthy granulations on the indurated surface of the ulcer are destroyed, leaving it in a condition for repair to take place.

The nerve filaments overlying the muscle are either torn from the surface of the ulcer and drawn away from the margin or are stretched and paralyzed, thus dulling their sensibility until a healthy process of repair can be established, and immediately gives the patient relief from that excruciating pain experienced at the time of each evacuation.

In almost all cases of whatever cause after removing other causes it will be found necessary to apply treatment that will stimulate and tone up the relaxed muscular coats of the bowel.

In the treatment of atony the local treatment will always need to be supplemented by the general. After locating the cause of the atony and applying treatment to that it will be necessary to tone up the bowel by various astringent and tonic injections; the most frequently used being hydrastis and drugs of that class.

Cold water is one of the best agents we have for this purpose, and can have no evil effects when properly used. In these cases only small quantities need be injected, not more than six or eight ounces, and at a temperature from fifty to sixty degrees. The patient should take an injection each morning at such an hour as will be convenient to have the daily evacuation. This should take place at as near the same hour each day as possible, preferably immediately following breakfast. The use of cold water should

be discontinued as soon as the habit of having a regular daily evacuation is established.

A great help in treatment is gained when we have impressed the patient with the importance of having the bowel move at a regular time each day. Having the evacuation at a regular time each day is merely a habit, but is a habit anyone can and should cultivate.

It will be necessary in some cases to give a mild saline purgative for a few mornings, to be taken immediately after arising.

Sometimes a pill of cascara at bedtime daily, or every second or third day, will assist, but anything of a purgative or laxative nature should be given for a definite purpose and discontinued when that purpose has been accomplished.

Nux vomica and strychnia are probably the best drugs we have for internal use and can be continued without evil effect for as long a time as necessary.

These last named remedies depend on their stomachic properties, improving the appetite and assisting digestion by their effect on the gastric mucous membrane and imparting tone to the muscular walls of the intestines, in this way increasing peristalsis.

These patients should regulate their habits; keeping regular hours for sleep, and especially eating at regular hours, eating a mixed diet, masticating the food thoroughly, and regulating the digestion when faulty. They should be encouraged to take plenty of outdoor exercise, preferably walking, golf, tennis, and games of that nature. Tonic treatment should be given when needed. Iron should not be given except in anemic cases.

These patients must be impressed with the fact that much of the success or failure of treatment depends upon themselves; that they must take exercise; that they must eat a suitable diet; that the daily evacuation is a most important function.

If we will give these cases more careful and thorough examinations and treat them as energetically as other diseases we will get equally encouraging results.

DISCUSSION.

Dr. A. B. Graham, of Indianapolis: It is needless for me to state that the physician recognizes the frequency of the disease constipation and the difficulty of effecting a cure. Every case is a law unto itself. I would especially refer to cases which we might term atonic constipation in which there is impaired peristaltic activity of the intestinal tract. I believe in the majority of these cases if the physician could get the co-operation of the patient he could effect a cure and not give any medicine at all. We are getting away from that point of drugging the patient in the simple condition of constipation. I do not refer to that condition where there are hemorrhoids or fissures of the anus in which we have a contraction of the sphincter, which is not truly constipation, but more strictly speaking obstipation. I thought I was getting along very well by holding to four rules. The drinking of cold water in the morning in large quantities, giving it cold because we can demonstrate that it increases the peristaltic activity of the stomach and intestines. The majority of physicians, I believe I am safe in saying, are in the habit of giving warm water, and they argue that if they send their patients to the springs they get warm water, simply because it takes up a larger quantity of salts. But cold water stimulates stomach and intestinal activity. So give cold water the first thing in the morning. Another rule is regularity in time of going to stool; and that is the hardest proposition which the physician has to impress upon the mind of his patient. You tell them to drink cold water and go to stool at a regular time. If you go to stool at 7 o'clock this morning that means that you go at the same time tomorrow morning whether you have a desire or not. It has been demonstrated thoroughly by our German friends that the feces pass from the sigmoid into the rectal pouch at a certain time every twenty-four hours, and unless the patient responds to the tenesmus which comes on at that time, what takes place? There is a retro-peristaltic action and the feces draw back into the lower portion of the sigmoid, and if they continue to resist this desire which comes on at that stated time they must necessarily suffer from constipation; but you let that individual re-

spond to the desire which comes on at that time day in and day out and in the majority of cases if they are not suffering from hemorrhoids or fissures they get well, and in many of these cases if they drink cold water and regulate the diet the fissure will not produce constipation but they will have regular evacuations of the bowels. We can feed a patient on beefsteak, eggs and milk until we make him constipated, because there is not much residue. We have to put him upon a vegetable and fruit diet. There are exceptions where we can not give fruit on account of the flatulence it produces; but put him upon vegetables and the cellulose in them will stimulate the peristaltic activity of the intestinal tract. Now an old practitioner whom I respect very much told me the reason we did not get good results from cascara is because we do not know how to use it. He said use the fluid extract and keep them upon it even if they come back in a week and say they are not getting any effect from it. Do not be discouraged but keep them upon it, and you can get it up to twenty drops three times a day without producing any bad effect. As soon as you have got the individual's bowels regulated you can reduce it by one drop a day, and then the point is regularity in the time of going to stool. But talking with Dr. Edwin Walker last evening he said, "I do not give a dose of a laxative or purgative or a saline in one case where I gave it in a hundred two years ago. He said let them alone and the bowels will regulate themselves.

Dr. J. W. Squires, of Churubusco: This is a trouble that every doctor has met, and has met with serious cases. When cascara does not relieve these conditions it has been my experience that I may expect something serious the matter. I have now three cases in mind that I have had in the last twenty-five years in which I did everything I could and that I thought was proper to relieve them. One case developed cancer of the kidney. The bowel was involved, producing a stricture, and there was obstipation. In another there was cancer of the omentum that involved the bowel. He vomited everything he ate and lived forty days. The condition led to occlusion of the bowel. The other case was also one of cancer of the bowel. One method we used in the hospital was the

kneading of the bowels by means of a cannon ball passed over the region of the large bowel. But when cascara is properly and persistently used, with cold water in the morning and calling upon nature at the proper time, if it does not relieve these conditions then we may suspect that we have something serious within. That has been my experience.

Dr. Whitfield Bower, of Michigan City: I wish to indorse the four rules Dr. Graham laid down and in addition the good presentation by Dr. Fry, but would like to add one other feature to them, and that is warm water at night, not to stimulate peristalsis but to furnish fluids for the bowel. It has been my observation in these cases that they do not ingest sufficient fluid, and the fluid being furnished at night and the cold water in the morning to stimulate peristalis will produce the action desired.

Dr. C. S. Bond, of Richmond: I think the tendency of the times is to use less and less drugs. We have had some splendid papers in that line—from Dr. Barker, and the evidence he has shown in some of these cases is very striking. The mental effect advice has on some of these people oftentimes is sufficient to produce a proper evacuation of the bowel by following the rules already laid down by the essayist. I think doctors are given more to giving medicine for constipation than any other disease. It is a disease, oftentimes, in the rectum. They come asking relief. It is easier to give cascara or podophyllin or calomel than it is to talk to them and tell them the truth. The fact is, we do immense harm by prescribing without proper examination and effort to treat them otherwise than by medicines. There is no reason why people under ordinary circumstances should be given a cathartic at all. We should not give it. We only perpetuate a bad habit. They are irritants in the bowel and the bowel tries to get rid of them. They stimulate peristalsis. It is like whipping up the tired horse. And so we make it necessary to give more tomorrow to make still further increased peristalsis. That method is all wrong and I wish to impress it upon you that we may lay the foundation for acute and chronic inflammation of the alimen-

tary canal. We have after awhile a state of chronic congestion of the canal and that is a favorable condition for the production of all sorts of toxins and the development of the typhoid bacillus and other infections. Talk to your patients about the movements of the bowels, about the sorts of foods, etc., and going over the matter in that way will satisfy your patients. I have had that experience for years. It is a simple psychological matter and you can cure them without medicine at all. I think we do a great deal of injury by giving drugs for constipation.

Dr. Berna C. Fry, of Indianapolis: I think that most cases of constipation, unless there is some lesion of the lower bowel in the region of the anus, are due to neglect in reference to the habits and their diet, and, as has been said, if you will sit down with these patients and give them an understanding of what takes place in the process of evacuation and explain to them that they can stimulate peristalsis by paying proper attention to the bowels and going to the closet at a regular time each day, and get them to understand that they do not need any drugs to get the bowels to move, we can accomplish all that is desired. In reference to drugs, I do not think it is a good plan to give drugs in any trouble without a definite object in view. Simply give a laxative at first to help to bring about an evacuation and then go each day at a regular time, and when you have impressed upon the patient that he can assist very materially in bringing about a bowel movement we have gained a great point. We should keep these patients under observation. They come to the office expecting to be cured by a prescription or two. It can not be done in that way. They must come back from time to time for instructions. I think in that way we will get better results than a good many patients are receiving.

THE ETIOLOGY OF TYPHOID FEVER.

BY T. VICTOR KEENE, M. D., OF INDIANAPOLIS, SUPT. LABORATORY OF HYGIENE, INDIANA STATE BOARD OF HEALTH.

Every case of typhoid fever is caused by the activity of a member of the typhoid group of bacteria in the body of a non immune human being. For practical purposes, it may be said that each and every case of typhoid fever is caused by the taking into the alimentary canal of a nonimmune person a portion of the excreta of a human being ill with typhoid fever. The excretions of the human body are infectious, because they contain in varying numbers typhoid bacilli. Every excretion from the human body contains these bacilli.

The human excretas are of four varieties: First, those coming from the mouth and nose; second, those coming from the skin; third, those coming from the kidneys, and fourth, those coming from the bowels. The excretion coming from the mouth and nose, viz., saliva and exhaled air, contains typhoid organisms so rarely that as a practical etiological factor it can be ignored. The skin contains typhoid bacilli in practically all cases, occurring most commonly in the region of the so-called rose spots, and in other parts of the body skin, due to the fouling of the skin by the feces or urine. The skin excretion, however, as a practical factor is insignificant compared with the excretions of the kidneys and bowels, viz., urine and feces.

The urine contains typhoid bacilli in about 75 per cent. of all cases, and the important feature of this carriage of typhoid bacilli is that they persist in the urine usually for weeks after the patient has clinically recovered and is up and about. The feces contain typhoid bacilli in all cases, so that practically the urine and feces are the most important avenues of excretion from the human body of typhoid bacilli.

Man is the only animal capable of developing typhoid fever. Dogs, cats, rats, guinea-pigs, horses—in fact none of the animals which may develop other of the acute infectious diseases of man, can develop typhoid fever, even when infected. So that every case of clinical typhoid fever is caused by infectious material obtained from a human being ill with the disease.

It would be impractical to attempt a full discussion of the various diverse factors that enter in the consideration of the etiology of typhoid fever. It may be said that every case of typhoid fever is due to the mechanical carriage of typhoid bacteria from the body of a human being ill with the disease into the body of a person who is nonimmune. The mechanical carriers are very numerous, the most common being water, food, infected hands and soiled linen. Our consideration of the subject at hand can profitably be divided into three paragraphs: 1st, discussion of how typhoid bacteria leave the human body; 2d, discussion of the life cycle of the typhoid bacteria outside of the human body—particularly their life cycle in water; and 3d, discussion of how the organisms enter the human body.

HOW TYPHOID BACTERIA LEAVE THE HUMAN BODY.

Different varieties of disease producing organisms by preference select as their point of attack different varieties of tissue of the body. Thus diphtheria bacilli attack the tissues of the throat; the pneumococcus attacks the lung tissue; while the typhoid bacillus attacks the tissues of the bowel, and preferably the glandular structure—notably Peyer's patches.

The whole process is essentially an inflammation of the bowel; the mucosa of the intestine during typhoid fever being deeply congested and engorged. About seventeen or eighteen days generally elapse from the time the typhoid bacteria are taken into the body until the symptoms of the disease appear, so that a physician is rarely called in to see a case of typhoid fever until about eighteen days after the patient has taken into his system the infectious material. During all this time the disease has been slowly developing.

For about the first seven to ten days, after the taking into the body of the infectious material, the typhoid bacteria develop and multiply in the bowels and only their toxic products are absorbed. During this time all the tissues of the bowels are about equally involved in the disease process. From about the eleventh to the fourteenth day the typhoid bacteria attack the glandular structure of the bowel, and from there are readily taken into the blood.

It is a common and usual event in all cases for the typhoid bacteria to enter the blood, and this occurs practically always before the twentieth day of the disease; so that by the time a physician is called in to see the case, the typhoid fever is no longer a disease of the bowel alone, but is a general systemic one, with typhoid fever bacilli being carried by the blood current to all parts of the body. These organisms may lodge in the pleura, producing a pleurisy; in the meninges, producing a meningitis—a not uncommon event in typhoid fever—or they may lodge in the lung, producing a pneumonia. In fact, they may attack any tissue of the body, exhibiting a lowered vitality with lessened resistance—thus bone lesions are frequently met with as a typhoid fever sequelae.

It is not my purpose in presenting this paper to deal with typhoid fever from a clinical standpoint, but I wish to add, parenthetically, that recognizing the fact that typhoid bacteria are taken into the blood stream at an early stage of the disease, we can readily see why attempts at intestinal disinfection, by use of antiseptics, have not produced any marked effect on the clinical course of the fever, aside from the prevention of gas development and other activities of fermentation bacteria in the bowel, for at the time these measures of intestinal antiseptics are instituted the disease is no longer a local one, but is a systemic one.

If by any therapeutic effort we could render the bowel absolutely sterile and free from typhoid bacilli, it is doubtful whether such measure would markedly alter the so-called typhoid course after the bacteria have once entered the blood stream, and the organisms are invariably in the blood stream at the time a physician first sees the case. They are removed from the blood in several ways: 1st, by phagocytosis; 2d, excretion by way of the ex-

creting glands—most notably the kidneys—and 3d, destruction by the agglutinins.

From the human body the greatest number of typhoid bacilli are excreted by way of the bowel discharges. This avenue of infectious excretion has been fully considered by this Association before, so I will not take time to discuss it. It is the most common method of carriage of typhoid bacteria out of the body. Important as the bowel discharges are, it is my opinion that the urine is a more dangerous avenue of infection than the feces, because of the greater ease with which water supplies may be infected with urine than with feces.

In a majority of all cases of typhoid fever, the typhoid bacilli exists in the urine for from six to nine weeks after the patient has recovered from all symptoms of the disease. It has been known for many years that typhoid bacteria were to be found in the urine of a patient suffering with the disease, but the significance of the finding has not been appreciated until within the last two or three years. It is probable that a greater number of cases of typhoid fever are caused by infectious material leaving the body by way of the urine than by way of the bowels. I can not dwell upon this point of urine conveyance of typhoid fever from the body of a patient too strongly. The attention of hygienists has been focused on this particular phase of the typhoid fever problem only within the last few years, and it is quite certain that this source of infection is a very important one.

The important feature of this excretion of typhoid bacilli is that the typhoid bacilli are found in the urine for many weeks after the patient has recovered and is up and around, as the urinary bladder offers very favorable conditions for the growth of typhoid organisms, and they rapidly increase in number there, and the patient can thus scatter the infection very widely.

To sum up, typhoid bacteria may leave the human body by any of the four varieties of excretion. The excretion coming from the body by way of the skin or the mouth and nose contains typhoid bacteria in such small numbers and so rarely, that as a practical means of acquiring the disease their influence is not

great. The urine and the feces contain typhoid bacteria in great numbers. The important factor regarding excretion of typhoid bacteria in the urine, is that the typhoid bacteria persist in the excretion for weeks after the patient has recovered from symptoms of the disease.

LIFE HISTORY OF TYPHOID BACILLUS OUTSIDE OF THE BODY.

But little real knowledge regarding the life history of the typhoid bacteria out of the human body existed until within the last few years. There were many conflicting theories and fancies, but little real knowledge. These following facts are now known: The typhoid bacillus is not a hardy organism; in fact it tends to die out rapidly after it has left the human body, unless grown on special culture media, or under conditions which are not normally found.

The typhoid bacteria do not multiply in water; in fact they die out rapidly. Long lines of experiments have been conducted, and it has been shown absolutely that the typhoid bacillus dies out in ordinary water in from four to five days; while in sterile water they remain alive as long as twenty-one days. The length of time the typhoid bacteria remain alive in water is dependent upon a number of factors, probably the most important of which are the common water bacteria.

The important point in the history of the life cycle of the typhoid organisms outside of the human body, is that the organism does not multiply in water and that it lives there only from four to five days. From this we at once arrive at other important considerations. To keep a typhoid fever epidemic in existence, caused by polluted water, it is necessary to repeatedly, at short intervals, reinfect the water, as it is very obvious, from a consideration of the life cycle of the typhoid bacillus, that the infectiveness of the water would cease of its own accord in about a week. So that for a water to remain nonpotable over a protracted period of time, it is necessary that the water be continuously reinfected with typhoid excreta.

It is possible for a water to be badly polluted and infect a

large number of people, and by the time the typhoid fever develops clinically in those people so infected, for the water to have completely purified itself and become absolutely potable. The period of incubation of typhoid fever in the human being is about three times the period of life of the typhoid organism outside of the human body, so that unless the water is being continually reinfected, the dose of infectious material which caused the typhoid fever will have entirely spent itself and been dead for at least nine days to two weeks before the first cases appear.

The degree of infection of a water is determined entirely by the quantity of typhoid feces emptied into a given volume of water, for the number of typhoid bacteria present in water is exactly the same as the number in the feces as they left the human body, minus of course the number destroyed by the action of common water bacteria. The typhoid bacteria are destroyed by common water bacteria—a water rich in bacteria will destroy typhoid bacteria much more quickly than a water fairly free from bacteria. A driven well infected with typhoid feces is more dangerous than a surface water well similarly infected, as the well by virtue of its normal low bacterial content will require more time to cleanse itself of typhoid bacteria than the surface water, which is richer in bacteria.

METHOD BY WHICH THE TYPHOID ORGANISM ENTERS THE HUMAN BODY.

Practically all cases of typhoid fever are caused by the use of infected food or water; the food or water simply acting as a mechanical carrier. The common train of events leading to the developing of typhoid fever is as follows: You have a patient ill with the disease. His excreta are emptied into the closet in his home; from there they get into the sewers or into the wells; from the sewers to the rivers; from the rivers to the public water supply, and from the public water supply to nonimmune individuals. There can be no question but that a great majority of the cases of typhoid fever are caused in this manner. However, hardly more than 60 per cent. or 75 per cent. of cases are caused from

nonpotable water. There are other carriers of typhoid infection than water. Infection of the food supply is a very common method.

There have been to date 196 epidemics of typhoid fever reported, caused by polluted milk. The way milk can become polluted is briefly as follows: The cow can not acquire typhoid fever, and the milk leaving the cow is absolutely free from germs of typhoid fever. However, in washing the cans, in which the milk is stored, polluted water is frequently used. Typhoid bacteria do not increase in number in water. However, typhoid bacteria do increase in number in milk and they increase rapidly. A half teaspoonful of polluted water in a five-gallon milk can will in twenty-four hours create millions and millions of typhoid bacteria. Epidemics caused in this manner have been frequently reported.

We could cite many examples of this kind—the principal involved is the same in all cases. We must have some mechanical carrier of a portion of infected excreta—the carrier may be water, food, linen, the hands, insects or any of the hundreds of other agencies that may be cited; but in all cases it is a mechanical carrier.

To recapitulate. The typhoid organism may leave the body by any one of the avenues of excretion. Leaving by way of the mouth and nose is rare. Leaving by way of the skin is uncommon. Leaving by way of the urine occurs in about half of all cases. Leaving by way of the bowels occurs in all cases.

The typhoid organism outside of the human body is not a very hardy organism, tending to die out rapidly in water. Its period of life in water is less than a week, so it is necessary to continually reinfect the water supply to keep the epidemic alive.

The typhoid organisms re-enter the body by way of the water supply or the food supply. Hardly more than from 60 per cent. to 75 per cent. of all cases of typhoid fever are caused by nonpotable water. An appreciable percentage are caused by infected food.

THE MANAGEMENT OF TYPHOID FEVER.

BY GARRETT PIGMAN, M. D., OF LIBERTY, IND.

To begin with, I am fully in accord with the views of Dr. Osler —that the profession was long in learning that typhoid fever is not a disease to be treated by medicines. This fact does not in the least reflect upon the skill of the profession, for often in other diseases the advice given by the physician is of more importance than the medicines prescribed. I am well aware, in making the above statements, that I will be accused by some of therapeutic nihilism; but a medical man, in duty bound, should express himself on a subject as he sees it.

The patient should be put to bed and kept there until convalescence is well established; notwithstanding the opinion of some physicians to the contrary, who allow their typhoid patients to get up to stool and to sit up to eat. I am a staunch advocate of the rest cure in this disease. The room should be well ventilated, and the patient, bed and room kept scrupulously clean.

When a case of typhoid fever occurs, it is as much the duty of the attending physician to protect the remainder of the family and neighborhood from infection as it is to take care of the patient already ill. If more attention were paid to that part of the management, additional cases and epidemics would oftentimes be prevented. The case should be promptly reported to the health officer so that he can act in an official capacity with the doctor in charge.

From the beginning the water should be boiled for all who drink it. Disinfectants should be used in a scientific and practical manner, and not as is too often the case in a careless, slipshod way. The physician in charge should give specific directions in regard to disinfectants, and furthermore he should see to it that his orders are carried out to the minutest detail. The dishes or

anything else used by the patient should not be used by the rest of the family. It was at one time believed that the germs of Eberth were taken into the system only through the drinking water; but it is now known to be transmitted in other ways; hence the importance of absolute cleanliness in everything and everybody in any way associated with the case. I want to say right here in connection with this subject that the health circulars sent out by our efficient State Board of Health have worked wonders in educating the people on hygiene and sanitation. How were the people to know about these things if it were not brought before them?

Was it strange that the farmer who had not had a case of typhoid fever on the premises for fifty years, should think he had the best well water in the county, when he had not been told how it could become polluted? There is a prejudice existing on the water question that must be overcome.

The feces and urine should be thoroughly disinfected before being disposed of. It is only within recent years that the profession has learned that the urine is also loaded with typhoid germs. As few people as is possible to get along with should enter the sick room. The day of indiscriminate visiting to the sick has passed; rest and quietude being almost a sine qua non in this fever. A good trained nurse is a great advantage. The late Dr. John Moffett, of Rushville, Indiana, in discussing typhoid fever before the Union District Medical Association a few years ago, said that he claimed to know more about typhoid fever than anyone present, for the reason, that for a period covering several years of his practice, he held post-mortems on most of his typhoid fever patients. The treatment as told by him, was venesection and calomel; both repeated until the patient was moribund, or the fever had run its course. The doctor related the above that we might profit by it. That was over fifty years ago, and the mortality was sometimes more than fifty per cent. With all due respect to the pioneer physicians of this country, it seems strange indeed that they did not sooner rebel and break away from a treatment attended with such a frightful mortality. A charitable view would

be that the treatment of typhoid fever, like most other things in the world, had to pass through certain evolutionary epochs; and if it had not been in their day, it might have come in ours; and we are now possibly reaping the harvest of their experiences. A question that naturally arises, is typhoid fever as malignant now as it once was, or is it like some other of our diseases less virulent in its nature? A general improved sanitary condition no doubt has a modifying influence on most of the diseases.

The diet is a much discussed question just now, and well it should be, for it is unquestionably the most important thing to be considered in the treatment of typhoid fever. I believe, as do the great majority of physicians, that milk is the sheet-anchor in the diet, and that other foods should be tried only when milk disagrees with the patient. So far, I have yet to find the patient that milk disagreed with that could take any other food with any better results. The secret of giving milk is in diluting with water one-half to two-thirds. The dilution being necessary on account of the decreased peptic power of the stomach. Some there are who claim that milk is a favorite breeding ground for the typhoid germs. Theoretically they may be right; practically they are wrong. Patients should be given water freely; it prevents emaciation, and is the best of all diuretics, and it is through the kidneys that most of the poison and excrementitious matters are separated from the blood. Eggs, except in the form of albumen-water, do not, from my observation, agree with the patients. Soups, broths and beef teas increase the diarrhea and bring on tympanites, and for that reason are quite objectionable. The milk may be given raw, boiled or pasteurized, as seems best adapted to the case in hand. It has been my custom to give some albumen-water during the course of the fever, and to permit them to taste other things—but have depended upon milk for the main diet. The fuss being made all along the line about milk not containing the necessary ingredients to nourish the body is all bosh. There was a time in our lives when we subsisted and flourished on a milk diet, and for a considerable time, too. Again, they seem to forget that the typhoid patient takes the milk only for a short time,

comparatively speaking. Typhoid patients have been treated through to convalescence and given nothing but water; and according to reports made good recoveries. Such a treatment would not be popular with the laity, and it would require an iron nerve on the part of the physician to undertake to carry it out in private practice; but it is, nevertheless, entitled to some thought, when so much is being said today about carbo-hydrates and proteids. Intestinal antiseptics is a mooted question. I do not believe the claim for intestinal antiseptics is a tenable one. Typhoid fever, as accepted today, is a general infection, Peyer's patches and other intestinal lesions being only local manifestations. Therefore, the intestinal antiseptics could not affect the germs in the blood, liver, kidneys and other internal organs. I would not go so far as to make the dogmatic statement that intestinal antiseptics should never be tried; but I do take the ground that the man who gives special attention to the diet and watches closely its effects, and in that way prevents tympanites and other intestinal disturbances, will be far more successful in the treatment of typhoid fever than the one who relies upon the routine use of the so-called intestinal antiseptics to prevent and correct those complications. Some physicians advocate giving calomel, or some other laxative, to lessen the number of typhoid germs in the intestinal canal; but that theory is refuted by the fact that constipated typhoid patients do better than those with a tendency to diarrhea.

That cold baths should be given to typhoid fever patients is at the present time generally conceded; the manner in which the bath should be given is a question upon which the profession is divided. The same degree of cold is not demanded by all patients, but the bath should be tempered to suit each individual case. Statistics show that when the Brand method of cold plunging is carried out in detail, that the mortality is 2.5 per cent. lower than by any other treatment. But there are several points to be taken into consideration. The records are made in first-class hospitals, having the best of sanitary conditions, trained nurses, and under the general supervision of the physician-in-chief, a man usually of wide experience and superior ability, and above all he is out for a rec-

ord, and no stone is left unturned to bring about the best possible results. Most of the earlier Brand statistics were made in German military hospitals in time of peace, which meant young healthy subjects and mild epidemics. The Brand method is impracticable in private practice, therefore, some other method must necessarily be used. To use the words of Dr. Osler, "When I hear a poor fellow (who has been dumped, like Falstaff, 'hissing hot,' into a cold tub) chattering out maledictions upon nurses and doctors, I am inclined to resent it, and to pray for a method which may be, while equally life-saving, to put it mildly, less disagreeable." That the cold bath benefits the patient is beyond debate. How it accomplishes the good is not known. At one time it was supposed to benefit the patient wholly by reducing the temperature; but now even the most zealous advocates of the cold plunge do not claim so much for it. The Brand method prolongs the attack, relapses are much more frequent, and hemorrhages from the bowels oftener occur. If in the face of the unfavorable complications enumerated above the Brand method still save 2.5 per cent. more patients than by any other method, then it must do a world of good in some other direction. It remains for someone to decipher the defects and advantages of the Brand method, and then to see if some other plan of bathing can not be employed that will accomplish all the good of the Brand method, be less harassing to the patient and above all be adaptable and practicable to private practice. One theory—and possibly the correct one—on the way the Brand method of bathing benefits the typhoid fever patient, is that the shock and reaction to the nervous system has a tonic effect on the circulatory and respiratory systems, produces glandular activities all over the body, increases leucocytosis, stimulates the eliminative processes and in the sum total establishes a more perfect state of metabolism. But can not all this be accomplished by the cold sponging? Friction and massage are always employed in connection with the cold plunge and may play no minor role. Pospichl claims to have proven that mechanical irritation increases the dissipation of heat to a marked degree. The Brand method is entitled to all due credit, but it should not be

given an exaggerated value. Many physicians believe that if as much pains and thoroughness were given to the cold sponging as to the cold plunge, in the details, and especially as pertains to friction and massage, that we would be rewarded with at least a close proximate in the results.

Antipyretic drugs reduce the fever by influencing the heat-producing centers in the brain; and as these coal-tar preparations weaken the vital resisting forces, and thus increase the fatal tendency of the disease, should not as a rule be given. Quinine does no good, and as it disturbs digestion and increases the nervousness should not be used. If the patient does not sleep he should be put to sleep, and opium, generally speaking, is the best drug to use. Should we give any medicine at all? I answer, Yes; some palatable placebo three or four times a day simply as a suggestion; the encouragement to a typhoid patient is of such importance that it should never be overlooked. Good reports have recently been made on the antityphoid serum treatment, but it must yet be regarded as in the experimental stage, and it will take a long time to arrive at definite conclusions.

The mouth should be kept well cleansed, not only as a sanitary measure, but to prevent the complication of pneumonia; for the pneumococcus may lurk in many a typhoid mouth.

As to stimulants, quite a percentage of the patients need no stimulants; children rarely need them. When a general stimulant is demanded, as indicated by the dry tongue, delirium, muscular tremor and general asthenia, whisky is the best. Strychnia should not be continuously given, but can be added to carry the patient over a crisis—preferably given hypodermatically. The mortality from typhoid fever all over the world today is 15 per cent. When good nursing and nonmeddlesome treatment are instituted the mortality rate is brought down to 10 per cent. In first-class hospitals, where the cold baths are used, the mortality falls to 7 or 8 per cent. I do not wish to be understood that I think every case of typhoid fever we are called to see should be assaulted with cold baths as soon as the diagnosis is made; far from it, for each case is to some extent a law unto itself. A point

I especially want to emphasize is that too many typhoid fever patients in private practice are overtreated. Medicines should not be needlessly given, as it makes an additional strain on the already overburdened organs of absorption and elimination; and besides it certainly becomes very monotonous, if not disgusting, to a patient to be compelled to take a dose of medicine every two hours for three or four weeks.

Let drugs alone as far as possible, should be a maxim of the profession in the management of typhoid fever.

TYPHOID FEVER—CONDITIONS AT ONSET FORESHADOWING GRAVE, IF NOT FATAL TERMINATION.

BY GEO. E. FULTON, M. D., OF BLUFFTON, IND.

Typhoid fever is an infectious disease, characterized anatomically by hyperplasia and ulceration of the lymph follicles of the intestines, swelling of the mesenteric glands and spleen and changes in other organs. The bacillus of Eberth is constantly present in the lesions. Clinically the disease is marked by fever, a rose colored eruption, diarrhea, abdominal tenderness, tympanitis and enlargement of the spleen, but these conditions present a wide range in variation and even the fever varies in its character.

Typhoid fever prevails especially in temperate climates, and is widely distributed throughout all parts of the world, and probably presents everywhere the same essential characteristics. It prevails mostly in the autumnal months, and particularly in hot and dry seasons. According to some observers epidemics occur more frequently when the ground-water is low, under which circumstances the springs and water sources are more thoroughly contaminated and a greater source of the poison; in a dry season the poison is disseminated extensively in the dust; sewer emenations in the cities and privy cesspits in the rural districts are to be enumerated among the many sources of origin of the disease.

Males and females are about equally liable to the disease. Typhoid fever is largely a disease of youth and early life, the greatest susceptibility is between the ages of fifteen and twenty-five, and from this latter age a gradual decline in the number of cases to fifty-five and sixty; after sixty years, few cases are observed; it may occur in childhood, but infants are rarely attacked. As in other fevers, not all exposed to the infection take the disease, there being grades of susceptibility.

The researches of Eberth, Koch and others show that there is a special micro-organism constantly associated with the disease; it is a rather short, thick bacillus with rounded ends, on one of which, sometimes both, there can be seen a glistening round body believed to be a spore, but these are again thought to be areas of dense protoplasm.

The bacillus of typhoid grows readily in various nutritive media.

This organism fulfills two of the requirements of Koch's law, and, as stated by him, "it is constantly present in this disease and it grows outside the body in a specific manner."

The typhoid bacilli are found in the lymphatic tissues of the intestines, in the mesenteric glands, in the spleen and in the bone marrow, in the liver and in the bile, and some investigators have claimed that "the formation of biliary calculi is a cause of the fever."

The bacilli have also been found in the blood and in the tissues of the rose-colored spots; they are to be found in the intestines and the stools, in the urine they may be found in numbers, and in the sweat, in the endocardial vegetations and from meningeal and pleural exudations and from the seat of suppurations in various parts of the body.

Outside the body the bacilli retain their vitality for weeks in water.

In milk they undergo rapid development without changing the appearance of the milk. They may increase in the soil and retain their vitality for months. They are not killed by freezing, but, as Prudden has shown, may live in the ice for months. This is, of course, true of many other forms of bacterial and germicidal life in extremes of heat and cold. The direct infection by dust of exposed food stuffs, such as milk, meat, oysters, celery, bananas, etc., is very probable. The bacilli retain their vitality as stated for many weeks; in garden earth 21 days, in filter sand 82 days, in dust of the street 30 days, on linen 60 to 70 days, and on wood 32 days, according to the observations of Heffelman. This being the case, the health officers and physicians in general should insist

on better protection to the public against danger of inhalation of the poison and on account of exposed foods on the streets, as no doubt these are prolific sources of the bacilli gaining entrance to the system. Infection of water is undoubtedly the most common mode of conveyance of typhoid fever. Many epidemics have been shown to originate from a contaminated reservoir, well or spring.

During an experience of six years when county and city health officer at my home in Bluffton, Ind., it was my privilege to examine into several local epidemics of this fever and I have observed, in the main, that water from dug wells was often polluted with fecal bacteria and was in many instances the direct cause of the infection; whereas, on the other hand, the "deep drilled" wells and water obtained from the rock sources was practically pure and wholesome, and was without danger from such poisonous infection.

Petenkofer and others who have made an exhaustive and life-long study of the subject claim that "the poison is not eliminated in a condition capable of communicating the disease directly, but that it must undergo changes in the soil, which changes are favored by the ground-water." Once in the intestinal canal, these germs do not, as the cholera bacilli, increase in the contents of the bowels, but they penetrate at once into the epithelial lining and the lymphatics; upon the latter they exert their specific action. Brieger and Fraenkel have separated from cultures a poison belonging to the group of "tox-albumens" and to this "typhotoxine," as it has been called, the more serious features of the disease have been ascribed. The pathology of the disease shows that specific changes occur in the lymphoid elements of the bowel, chiefly at the lower end of the ileum; the alterations which occur are hyperplasia which involves the glands of Peyer in the jejunum, ileum and to a limited extent in the large intestine; the follicles are swollen, grayish-white in color, and project to a slight or considerable degree into the lumen of the bowel. The solitary glands which range in size from a pin's head to a large-sized pea, are usually imbedded deeply in the submucosa, but project to a variable extent. Later on there is a great increase and accumulation of cells of lymph-tissue which

may even infiltrate the adjacent mucosea and muscularis; the blood-vessels are more or less compressed which give the whitish anemic appearance to the follicles. This so-called infiltration, which is more intense toward the lower end of the ileum, reaches its height from the eighth to the tenth day, and then undergoes one or two changes, either resolution or necrosis, the latter rarely takes place at this stage, the resolution taking place by fatty and granular change in the cells which are destroyed and absorbed. In the case of necrosis and sloughing the hyperplasia of the lymph follicles reach a certain stage of destruction when resolution is no longer possible; the blood-vessels becoming choked and a condition of anemic necrosis obtains and sloughs form, which must be separated and thrown off; this process of sloughing may be superficial, affecting the upper part of the mucosa, or it may extend and involve the submucosa and submuscularis structures. The "slough," according to Marchand and Osler, may sometimes lie upon the surface of Peyer's patch, involving only the epithelial layer, and it may, as previously stated, in its extent, involve the deepest structure of the intestine, producing hemorrhages from the bowels of varying degree and further result in perforation of the bowel with ensuing peritonitis and death to the patient.

The onset in typhoid fever is rarely abrupt; after the prodromal symptoms have passed and at the end of the first week, in a majority of cases, not always however, as there is great variation in these cases, there is a steady rise in temperature, the evening record reaching a degree or a degree and a half higher each day, until 103 to 105 degrees are attained; the pulse is rapid, 100 to 110, of low tension and often dicrotic in character; the tongue is coated and the abdomen slightly distended and tender; there may or may not be delirium at this time, and the patient complains of headache and the bowels are generally loose.

Toward the end of the first or the beginning of the second week the liver and spleen become tender and enlarged and still later the rose-colored spots appear, first on the abdomen; cough and bronchitis are common symptoms.

During the second week, all the symptoms become aggravated,

the fever remains high with very little morning remission, the pulse is rapid and loses its dicrotic character, headache may no longer be complained of but a condition of torpor and dullness ensues; lips and tongue dry and parched, abdominal symptoms are more marked, there is greater tympanitis, diarrhea and tenderness.

In cases moderately severe in the third week, the pulse ranges from 110 to 130, and there now occurs a decided remission in temperature and a gradual decline of the fever takes place; but the loss of flesh is now very noticeable and there is great weakness; there is more or less delirium and wandering of mind; however, there is a decline in all the symptoms and in a majority of cases convalescence takes place in the fourth week. In a certain number of mild cases convalescence begins near the fourteenth day.

In the fourth and fifth weeks, however, in place of convalescence a certain class of cases may present an aggravated and alarming condition; the patient grows weaker, the pulse is very feeble, the tongue dry with increasing sordes and greater distension of the abdomen; the patient lies in a condition of profound stupor, muttering delirium and subsultus, terminating more or less rapidly with exhaustion and death.

Without going extensively into the merits of treatment, I would suggest, however, that there are certain lines in this department that are always to be observed; as the reduction of high temperature by the cold bath, or frequent sponging of the surface with tepid or cold water resulting in a stimulating effect; the flushing of the colon should be observed and the administration of intestinal antiseptics, also the use of strychnine and digitalis or other agents calculated to give tonicity to the heart and nerve centers and counteract the exhaustion of the system, which must necessarily ensue. The use of the most approved liquid alimentation containing beef, milk, liquid peptonoids and vegetable juices will be of vital importance. Many contingencies may arise, and I make the assertion that aside from these general indications, each and every case of typhoid fever is, in a sense, a "law unto itself," and calls for treatment applicable to the individual case. The plethoric or

corpulent patient weighing 225 pounds, calls for a different line of treatment and management than the one of spare build and nervous temperament weighing 125 pounds, and so on through the list with illustrations.

On the subject of perforation of the bowels in typhoid: Is there anything that surgery can do in these cases? In case of gunshot or other traumatic injuries to the bowels, surgery comes in and repairs the injury and in many cases recovery takes place. Is there anything worth while that surgery can do here in such an emergency?

With the foregoing general consideration of the subject, I wish now to call your attention to "Conditions at the onset foreshadowing grave if not fatal termination" in this disease. I call your attention to four different classes or types of cases as follows:

First.—Typhoid fever occurring in very plethoric or corpulent persons: In many such cases a condition of fatty changes exists in the heart walls already, then add to this condition the pathological changes in these same heart muscles wrought by the fever, together with other conditions at large in such corpulent persons, and disaster is almost sure to follow, with a large per cent. of fatalities.

Second.—Typhoid fever occurring in the pregnant woman after four and a half or five months gestation: She will, in the majority of cases, miscarry, and the shock of this crisis, with the exhausting influence of the fever, renders the case very grave, if not almost impossible for recovery in many such cases. The per cent. of such cases occurring is small, but nevertheless grave.

Third.—The occurrence of this fever in subjects previously addicted to the excessive use of alcoholic stimulants: In this type of cases the involvement of the liver and stomach, together with the weakened condition of the brain and nervous system, and in all cases whether due to inebriety or not, where there is persistent, active delirium from the outset, the chances are largely against the patient.

Fourth.—The occurrence of typhoid fever in persons who are the subjects of pre-existing organic disease, as of the heart or kidneys: Such conditions so compromise the power of resistance

to the disease as to give them from the onset of the fever an unequal chance in the race for their life. To be forewarned is to be forearmed; consequently when we recognize these conditions at the onset of this malady we should be intensely on our guard and give the patients the benefit of early and frequent consultations, with the most rational treatment, thereby safeguarding the life of the patient if possible and our own professional standing in the family and community. Study individual cases; remember we treat the patient and not the disease exclusively.

In Conclusion.—In respect to the use of "serum therapy" in this fever: Is the science of medicine progressing along this line as it should? May we not hope for an "improved serum" that may be injected and sent throbbing and pulsating through the blood into all parts of the system, that will hunt down and antagonize the typhoid bacilli, before they have seriously infected the lymph follicles and general system, and thereby arrest or modify this disease? We have done as much as this in the use of antitoxin in combating the ravages of diphtheria, and may we not hope to succeed equally as well in typhoid fever, with the proper serum? Here is certainly a broad field, open and waiting for some modern genius to enter in and perfect this discovery and place the science of medicine on a plane still higher.

DISCUSSION.

Dr. J. B. Garber, of Dunkirk: I am a little at a loss after hearing the three papers to determine in my mind whether it is at first a local or a constitutional disease; in fact, we have been taught both in the papers. We have heard in one that the general manifestations are primary, and in the other that the intestinal lesions are primary and the blood condition is secondary. I claim it is first a local disease manifested in Peyer's patches, and the blood condition is a secondary condition. We probably all agree as to the way the typhoid bacilli enter the body. There is considerable reflection cast upon milk. We all agree upon the manner of infection, and the first manifestations are in Peyer's patches

and the mesenteric glands. Now if we inject the bacilli direct into the intestines we can produce the exact conditions we find in the disease. Now again, if we sterilize the culture of the typhoid bacilli with heat sufficient to destroy the bacilli and then inject it we again get the manifestations of the disease. If this is true, is it not true that the disease is purely local in the beginning and the blood manifestations are secondary? If we have located the disease in the intestine why not try to destroy the germ there where we find it? I would hate to stand by and do nothing. I prefer to give something to destroy the germs if we can. I want to be recorded as one of those in favor of thorough intestinal antisepsis. We have heard how important it is to disinfect the typhoid stools, and the first speaker said in seventy-five per cent. of cases the urine contains the infection and should be disinfected. Now if it is a blood disease and there is no trouble going on in the intestinal tract why is it necessary to disinfect the discharges? Why disinfect the urine from three to six weeks after the patient has pulled through? If the discharges from the bowels are so infectious, why is it not desirable to render as nearly aseptic as possible the alimentary tract? The first speaker says it is eighteen or twenty days after the commencement of the disease before we see the manifestations. During an epidemic it might be well to use bowel antiseptics by way of prophylaxis.

As to treatment, I am favorable to minute doses of calomel and large doses of the carbonate of guaiacol. I leave that to the different members, but I believe in thorough intestinal antisepsis and in flushing the canal with water. Let them drink all the sterilized water they can, and give milk if they can take it. Bathing and good nursing are proper and right, but I believe the physician can do much to shorten typhoid in the third week. The last writer spoke of it. Why is there a third week? Because of the toxins developed in the intestinal tract by the typhoid germs. If that be true, why not use thorough intestinal antisepsis?

Dr. J. M. Wampler, of Richmond: Unfortunately, perhaps, I live where we have annually typhoid fever and have had for twenty-five years. Twenty-five years ago I saw these cases and

20 per cent. of them died. They showed sordes on the teeth and lips, had high temperatures and delirium—all the severe symptoms. But in the last thirteen years, since Woodbridge advocated the antiseptic treatment, we have not had nearly so much fever. Within the last thirteen years I have treated 134 cases of typhoid. I pronounced them typhoid because many were in one family, first one and then another taking it and running the typical course. Out of that 134 cases I have lost one in thirteen years, and that case died from perforation of the bowels; and had I had a good surgeon, or had I known how, I might have saved him by operation, because he was convalescent when that perforation occurred. Upon post-mortem I found the perforation, and I have the specimen now. But if we will follow out the antiseptic treatment we will have no trouble with typhoid as we used to have, and if everyone would follow the instructions sent out by Dr. Hurty, Secretary of the State Board of Health, we wouldn't have so many cases.

Now I wish to speak of the matter of taking care of the feces and urine. Usually when I go to a case I direct the family to carry their vessels containing the urine and feces back into the orchard and throw the contents into a hole in the ground with chips and burn it, and many a patient I have had in a family where there were boys and girls and men and women in which I had but one case, where twenty-five years ago the rest were all scared to death, even if they did not take the disease.

Dr. C. S. Bond, of Richmond: I think we ought to come here and reason about typhoid fever. See the opinions already advanced, because we do not have the same knowledge about typhoid. One man believes in the antiseptic treatment and the other is not in favor of medicine of any kind. We do not have the same conception of the disease. Typhoid is due to the bacillus of Eberth. They are taken into the bowel. There is no time when they do not have it after the bacillus is in the bowel. It takes ten or twelve days before we see the symptoms in the intestinal tract. What is going on during this ten or twelve days? They have found a nidus there and multiply on the fluid of the intestinal

contents, and at the same time are throwing out toxins. What happens? These toxins are taken up by the bowel through the villi of the intestines. They are the gateway of entrance to the body. After the toxins have got into the blood then you have the Peyer's patch. Then you have increased blood pressure and the nose-bleed. Nature tries to burn up the toxins by the fever, and it is destroyed there to a certain extent, as has been demonstrated. Now after this cycle we have typhoid. It has been there for twelve or fourteen days. Now then we see we have not understood the trouble. Suppose you give antiseptics. You do good, but if he has not got typhoid and you give antiseptics early you irritate the bowel and may do more harm than good. You do not know as a matter of fact that he has it at all. We will come to the point where you have to get symptoms before you give antiseptics. I doubt very seriously whether they kill any of the bacilli, because you will kill the intestinal tissues before you kill the bacilli. You are laboring already with the toxins. Vaughn has, in his report on typhoid in the Spanish War, written a classical essay on the subject. I do not think anything has been better done. It has been conclusively shown that some soldiers who went to that war had typhoid germs in their intestines. In a little while the water was infected and flies also carried the infection.

Dr. Theo. Potter, of Indianapolis: In regard to what Dr. Garber said as to the nature of typhoid I will say this: When the local lesion of syphilis has once developed we all know it is a constitutional disease and excision of the chancre don't cure it, and the same way with typhoid. We get our cue to the management of the intestinal features of typhoid by remembering that typhoid is not a disease of the intestinal contents, but of the intestinal wall. Thus it differs in that way from an ordinary case of acute intestinal indigestion, for instance, which is an abnormal process in the contents of the tract. Now as the result of that come several important doctrines as to the treatment. First, I wish to join with Dr. Pigman in his beautiful paper in protesting against the preliminary purgation in typhoid. That old custom was based

upon the idea that typhoid was a disease of the intestinal contents, which it is not, and unless there is some special reason to believe there is some abnormality in the intestinal contents to lead you to move it out, let it alone. I believe with Osler and with Dr. Pigman that the good old time-honored but mistaken custom of preliminary purgation should be done away with.

Now, second, as to intestinal antisepsis. The revelations of modern pathology have shown that typhoid is a disease of the intestinal wall and not of the intestinal contents. Now what can we expect to do by antisepsis? It has gone way beyond the intestinal wall. It is in the blood, and in ninety per cent. of cases we can recognize the disease in the blood in typhoid. All we can expect to accomplish by intestinal antisepsis is to remove those conditions in the intestines which contribute to the irritation of the intestinal wall. We can do good that way by lessening the diarrhea, the distension and possible hemorrhage and perforation, perhaps. But let us get a clear idea of what can be accomplished in this way and then get rid of the old idea that by anything we can do to the intestine we can stop the disease, although you can do good by proper management of the intestine to lessen these intestinal complications.

Third, in regard to another feature of the disease, the management of diarrhea, hemorrhage and perforation. I wish to emphasize the importance of an absolute rest for the intestine under these conditions. I would insist on the absolute starvation of the patient, not simply the cutting down of his diet, but absolute starvation for some time—everything by the mouth, water, food or medicine. That is what the surgeon does in the presence of a violent abdominal inflammation in order to secure rest, and then you have done the first and best thing in the management of that whole group of intestinal complications.

Dr. J. N. Hurty, of Indianapolis: It is to the honor of the medical profession to diagnose and treat typhoid, but it is to the honor and glory of the profession to be able to teach the people how not to have this disease which is a reproach to any community. We want to tell our patients and the people that they must cease

eating and drinking their own excreta. We must take care of it in a sanitary way, and whenever we go into a town and we find that nasty overflowing privy where the flies have access we must inform them that they have the conditions of typhoid. All that is necessary now is for a person to come along with the specific bacilli in the intestine or in the urine and use that place. And that happens all the time. I know of such an instance where a whole family was swept away and no information was given by the physician. The man's whole family had died. He had a good sanitary home in the country, but there was that unsanitary privy. That was the only thing about it that was not sanitary. Where did the typhoid come from? A woman comes to that home with a slight sickness, a slight diarrhea, and after she was gone the typhoid followed. Investigation of that patient showed that the urine was teeming with typhoid bacilli. The physician said nothing about it. So I think you will find all these epidemics are preceded by a series of mild cases. Take the epidemic at the Soldiers' Home at Lafayette. Here broke out two cases of typhoid. Where did they come from? Perfect sanitary arrangements, good food and water and yet the typhoid. Investigation finds out that the son of the commandant almost two years before came home with severe typhoid. Then followed before long a whole line of cases diagnosed as malaria, diarrhea, indigestion and one as an obscure form of heart disease. Out of them we find some 64 reacting to the typhoid test. It was typhoid in a mild form. It is of the utmost importance that we disinfect all dejecta from the severe cases, but what does that avail when the mild cases distribute it? Take care of all dejecta all the time in a sanitary way.

Dr. T. B. Noble, of Indianapolis: Two years ago I read a paper before this Association regarding the surgical aspect of this disease in which it was shown that upward of 300 people died in this State in a year from perforation as a surgical complication of the disease. Two years have elapsed during which time we may truthfully say upward of 600 individuals have died in this State as the result of this complication, and so far I do not know of a

single case having been operated or its operation attempted. How long are we who have to treat some of these cases, who will treat some of these cases in the coming months, going to fold our hands and allow them to die? Gentlemen, wherein is the difficulty? Is there failure on the part of the doctor to recognize this complication? Is it a lack of heroism, is it a lack of judgment, is it the fault of the mind or a fault of the heart? There is a fault somewhere, and I think it is time for the medical men of this State—and we represent the medical forces of Indiana—to wake up to the significance of perforation in typhoid. Now it is a complication that manifests itself by disturbance during the course of the disease that is seen in the temperature and pulse curves attended by focal pains and tenderness, with vomiting and prostration. So that these cases when they manifest these symptoms injected upon the other symptom complex are sufficient evidence for a consultation with a competent surgeon. Three cases out of every hundred will present these symptoms, due to the fact that in all probability in the last twenty inches of the small intestine a perforation is going to occur, and it will occur some time after the tenth day or second week of the disease. Now, Mr. Chairman, let not another year go by without somebody attacking this very fatal complication in this very common disease.

Dr. T. V. Keene, of Indianapolis: There are several dates in recent years which are prominently in the minds of the medical profession, particularly that portion of the profession interested in the study of the etiology of disease, because of the publication of very notable researches during those years. The year 1881 will always be memorable as the year in which Koch announced his discovery of the tubercle bacilli. The years 1899 and 1900 will always be memorable because it was at this time that a commission from the U. S. Army, headed by Major Walter Reed, demonstrated that the stegomyia mosquito was the carrier of yellow fever.

In 1904 and 1905 a working party composed of Professor Zeit of the Northwestern University, E. O. Jordan of the University of Chicago, and Professors Frost and Russell of the University of

Wisconsin, reported before the American Public Health Association a research they had engaged in to determine the life history of the typhoid organisms outside of the human body. Their results, which have since been confirmed by other investigators, have in many respects completely changed the prevailing idea as to the etiology of typhoid fever. I am quite well aware of the fact that the period of life of the typhoid organism outside of the human body, as commonly given in standard text-books is the same as that given in one of the papers just presented.

However, in the light of the research just enumerated, we are convinced that the period of life of the organisms outside of the human body is as given.

I shall not attempt to discuss typhoid fever from a clinical standpoint. To my mind, the important feature to grasp in the consideration of the etiology of typhoid fever is that the organisms persist in the urine for several weeks after the recovery, and that this method of conveyance of typhoid infection is a very prominent one.

Regarding the pathology of the disease, my ideas may be summed up as follows: The typhoid organism is taken into the stomach with food or water, or by some other mechanical means. It is then passed into the bowel, where it sets up a variety of inflammation in susceptible individuals. Only a small percentage of individuals infected ever develop the disease. The disease process instituted is of slow development, and from eighteen to twenty-one days elapse from the time of infection until the organisms have produced sufficient reaction to produce symptoms in a large overwhelming majority of all cases.

The disease ceases to be a local condition of the bowel on or about the eighteenth to the twentieth day; the organisms then are absorbed and taken into the blood, from which they are removed by active excretion, by the destructive action of phagocytes or by the action of agglutinins. The physician as a rule is not called in to see a case until the disease is about three weeks old, so that invariably when a physician first sees the case, the disease is no longer a local one but a systemic one, and any effort at local treatment is likely to be of little avail.

Dr. G. Pigman, of Liberty: In a fifteen minute paper it is hard to take up all the points of a disease like typhoid fever. I take issue with the doctor as to the manifestation in Peyer's patches being a primary manifestation. In regard to the disinfection of the intestinal canal, I do not think it is possible to do it. The only way you can disinfect it is to withdraw all food and then try to disinfect it with the idea that you are destroying the germs.

Dr. Geo. E. Fulton, of Bluffton: The first duty of the physician of course is to ferret out the cause of disease and prevent it if possible. The second of course is to cure it when it enters the system. I believe the most important thing before the medical profession today is the prevention of typhoid fever, and prevention is to be accomplished upon hygienic principles. Dr. Hurty made a tour of our part of the State a year or two ago, holding a meeting of the local health officers, and he had some charts and gave lectures concerning the various sources of origin of the disease. One chart I remember where there was a cesspoll or privy with a drain running to the well. The farmer thought he had one of the most healthy premises that could be had. Here was a drain leading off toward the well and the family taking these fecal bacteria into their systems through the stomach and bowels, and also through the inhalations. This disease is admitted into the system largely through the water and food ingested, as brought out in the papers. When there is disease raging throughout the country it is the duty of the physician to inform himself and then to agitate the question and educate the public through the prints and journals and by public meetings as to the way to prevent the spread of the trouble.

As to the pathology of typhoid, I believe we all understand this disease pretty thoroughly. The contagion enters the system through the food and water ingested. It does not remain in the intestinal contents but penetrates the epithelial lining and the lymphatics of the bowel, and that is the reason the administration of antiseptics will hardly do any good. If so, why not give antiseptics to prevent this disease? Dr. Keene has said and others

have shown that these germs have already entered into the lining of the bowel and the lymphatics many days before the doctor is called in. We only have the local manifestations and the general fever. Now what is the purpose of all this discussion upon the subject? It is to get the minds of the physicians to sift out the dross and to cut the corners of scientific thought and get them upon the good things in the way of practice. Remember we are treating the patient, not so much the disease, and we must keep abreast of the times and look into the matter, and especially the pathology of this disease.

THYROID HYPERTROPHY AND ITS RELATION TO COMPENSATORY PROCESSES.

BY JEWETT V. REED, M. D., OF INDIANAPOLIS.

In many diseased conditions of the body two processes are taking place; first the primary insult or primary pathological process, and second a compensatory or conservative process which attempts to neutralize or overcome the primary condition. In other words, in many forms of disease, nature brings about changes which are in themselves curative, or at least attempts to cure, or limit the primary disturbance.

I wish to mention a few of these compensatory reactions, and also to point out some of the characteristics of thyroid hypertrophy which seems to put it in this class of compensatory changes.

Inflammation is probably the commonest form of compensatory reaction. It is considered by most pathologists as an attempt at repair of an injury, especially injuries due to micro-organisms. The entrance of micro-organisms with their liberation of toxins constitutes the primary insult; the hyperemia, exudation, induration, pain, etc., are the secondary or conservative reactions which are attempting to overcome the primary condition. In the belief that inflammation is a curative process, Bier has based his hyperemia treatment for both acute and chronic infections. This consists in artificially producing the cardinal symptoms of inflammation, and the results obtained by Bier and his followers go far to prove that inflammation is a conservative reaction.

The increase in the leucocytes in the circulating blood and their migration to infected foci, and the formation of anti-toxins and immune bodies are familiar and striking examples of the protective power of the body against foreign invaders.

The wandering of the omentum to weak places in the hollow viscera, and to infected areas in the peritoneal cavity, and the

formation of fibrous adhesions in the serous cavities are still other examples of the protective power possessed by the living organism.

During the past few years we have begun to return to the idea of the ancients that fever is a "purification by fire" or that it is a useful and protecting reaction within certain limits. Animal experiments have shown that high temperatures 103 to 104 experimentally produced arrest or attenuate the growth and virulence of many forms of bacteria. Many clinical facts point to the beneficial action of fever, provided it is not excessive. For example: Holt found in analyzing cases of bronchopneumonia in the New York Asylum that cases whose temperatures were 102 or under showed a mortality of 71 per cent. Those whose temperature was between 102 and 104 showed a mortality of 60 per cent., and those whose temperature ranged between 104 and 105 a mortality of 59 per cent. In other words, the higher the temperature, the lower the mortality. It is possible that in a short time fever will be encouraged instead of being combated with cold baths and antipyretics.

The high blood pressure occurring in chronic nephritis is, according to Cohnhein, a compensatory process, brought about in order to send the blood at a greater rate through the kidneys whose secreting surface has been reduced.

The high blood pressure following a sudden increased intracranial pressure from an apoplexy of the cerebral or meningeal vessels, was considered, a short time ago, an indication for blood letting. Cushing and others have shown conclusively that the increase in blood pressure in these conditions was a compensatory process brought about by a stimulation of the vasoconstrictor center in order that the blood could be forced through the cerebral vessels against the pressure exerted upon their walls from the exterior.

Many of the symptoms of which the patients complain are in reality useful processes, such as many cases of cough, vomiting and diarrhea, which are nature's means of getting rid of injurious material, and should be considered as conservative reactions.

Hyperesthesia surrounding an area of anesthesia is a compensa-

tory reaction in order to protect the part that has been deprived of the protective sensation of touch and pain.

Muscular hypertrophies are a common form of compensation. This is seen in the heart muscle in cases of valvular and arterial disease, and in the smooth muscle of the hollow viscera when there is a demand for increased functional activity.

Glands undergo a compensatory hypertrophy when portions of their parenchyma are destroyed, such as kidney, liver and thyroid. The nature of hypertrophy of the pituitary body, parathyroid, thyroid and lymphatic glands is undetermined, but it will probably be found to be a useful process when these changes are better understood.

In the above examples I have tried to show that the body tends to overcome pathological processes in many diseased conditions. Perhaps many other compensations are constantly taking place, but so far we have been unable to differentiate them from the primary pathological condition. The knowledge of these compensatory processes is very essential, for only in becoming familiar with these can we arrive at a rational system of therapeutics and be able to aid nature instead of antagonizing it, as we often undoubtedly do.

As most hypertrophies occurring in the body can be considered as compensatory, it seems reasonable to consider simple and exophthalmic hypertrophy of the thyroid gland also as a compensatory change, and I wish to give the facts pointing toward this view.

In 1896 Dr. Halstead published an article on "The experimental study of the thyroid glands of dogs, with especial consideration of hypertrophy of this gland." This paper was the result of work carried on since 1888, and gave the first accurate description of the microscopic findings in thyroid hypertrophy. Horsly began a similar series of experiments in 1886, but his results were not published until a still later date. However, the conclusions arrived at by these two independent series of experiments were practically identical. It was found, that if one-half to three-fourths of the thyroid tissues were removed, provided the wound

healed per primam, the animal showed no signs of thyroid insufficiency. After the animal had lived from thirty to forty days, the remaining portion of the thyroid gland was found to be considerably enlarged, due most probably to a compensatory hypertrophy that had been produced in order to replace, to a certain extent, that portion of the gland that had been removed.

The microscopic findings in this hypertrophied gland are most interesting. The normal thyroid gland shows round follicles of various sizes, lined with a single layer of flat or slightly cuboidal epithelium, and filled with a thick colloid material. The changes that are seen in the hypertrophied gland are as follows: The follicles instead of being round are very irregular in shape, and may even be compressed into fine canals or slits. The alveolar epithelium takes on a most marked change; instead of being flat or slightly cuboidal, the cells become markedly cuboidal or more commonly columnar in shape. Moreover there is an outgrowth of the epithelial cells into the alveolar cavity forming either small buds, elongated processes or even polypoid outgrowths, the degree of this epithelial outgrowth being in proportion to the amount of hypertrophy. As the alveolar cavity becomes filled with these epithelial processes, the colloid decreases proportionately, and at the same time becomes much thinner in consistency. In the extreme grades of hypertrophy the thyroid vesicles become completely filled with epithelial cells which entirely replace the colloid material. The above changes are in all probability due to a conservative process on the part of nature to compensate for the thyroid tissue that had been removed. It was very interesting to find a case of thyroid enlargement following an acute infection that showed this same microscopic picture of thyroid hypertrophy. I saw the case with Dr. H. C. Sharp at the Indiana Reformatory last August. The main points in the history are as follows:

Patient white male, age 22. Operated upon June 29, 1905, for varicocele. This was followed by severe local infection and abscess. One month later there appeared enlargement of thyroid gland and pressure dyspnea. These symptoms gradually increased but no exophthalmic symptoms appeared. Three months

from onset the right lobe of thyroid was removed. This was about the size of a hen's egg, was soft and friable and of uniform consistency.

A cross-section shows a uniform surface, and a few vesicles can be seen out of which a very thin colloid can be expressed. The microscopic examination of the gland shows a picture identical with that found in the early stages of hypertrophy as described above. Other similar cases have been reported of thyroid hypertrophy following infections. Dr. Halstead in his series of experiments, found typical thyroid hypertrophy following a low grade of peritonitis in a dog. The microscopic picture of the gland was exactly the same as that found in the hypertrophied lobe following partial thyroidotomy.

Roger and Garnier in 1901 described enlargement of the thyroid gland in cases of scarlet fever, diphtheria, typhoid fever, cerebro-spinal meningitis, measles, smallpox and purulent peritonitis. The microscopic changes in the glands in the above conditions consisted chiefly in a marked change in the shape of the alveoli and an hypertrophy of the epithelial cells, many of which however, were undergoing degeneration. The very small number of leucocytes found in these specimens excluded the possibility of the condition being one of thyroiditis.

Garnier also found changes in the thyroid gland in patients with tuberculosis in different parts of the body, the thyroid itself being free from tubercular diseases. Out of the twelve cases examined, eleven showed definite parenchymatous hypertrophy of the thyroid gland. There was an increase in the connective tissue, but its most striking change consisted in an active proliferation of the alveolar epithelium. He believes these changes are secondary to the toxins of tuberculosis, and also that there is an increased secretion of the hypertrophied gland which produces the rapid pulse so often seen in the early stages of tuberculosis.

This picture is again seen in one of the forms of endemic goitre, the parenchymatous struma. The etiology of this, according to the supposition of Virchow and Kocher, is due to the taking in of toxins from drinking water that has passed over certain geological formations.

So far we have seen that the changes in the thyroid gland following acute infections, acute infectious diseases, tuberculosis, and as an endemic, are practically the same as those changes found in compensatory hypertrophy experimentally produced.

Let us now see the relations between thyroid hypertrophy and the changes that take place in the gland in exophthalmic goitre.

Dr. W. B. MacCollum in a report on "The Pathological Anatomy of Exophthalmic Goitre" (Aug., '05) says: "The alveoli varies greatly in size and form, many of them showing remarkable foldings of the epithelium so that the cavities have the appearance of sending off long diverticula. Frequently these diverticula become constricted off from the remainder and new alveoli are formed." The epithelial cells take on a high columnar form and frequently show mitotie figures. The colloid material is markedly decreased. The vascular supply is extraordinarily rich, the veins being large and friable. The connective and lymphoid tissue of the gland are also increased. He also says, "This resembles almost exactly the alteration which was produced in the experiments of Dr. Halstead after partial extirpation of the thyroid gland, that is the condition of compensatory hypertrophy."

In so much as the microscopic changes in thyroid hypertrophy and exophthalmic goitre are practically the same, and as the simple hypertrophy often follow infections of various kinds, it seems probable that exophthalmic changes may also be due to this factor. A history of infections or infectious diseases preceding the onset of exophthalmic goitre are often negative, but I have collected a few cases that seem suggestive. In looking over a series of histories of exophthalmic goitre I found quite a number that gave a previous history of tonsilitis, influenza and other infectious diseases occurring a few months prior to their thyroid symptoms. Of course in these cases the associations may have been accidental, but in the following cases the relation between the two conditions is more direct. In two cases the exophthalmic symptoms followed directly after an attack of influenza, and three others where a very severe tonsilitis preceded the exophthalmic symptoms. In one case of very severe tonsilitis and pharyngitis, there appeared a marked exophthalmos and tremor, with slight

enlargement of the thyroid gland. The symptoms entirely disappeared with the throat infection and have not returned. Two cases of acute appendicitis associated with exophthalmic symptoms and slightly enlarged thyroid. These symptoms started with the onset of the appendicitis and disappeared entirely a few days after the operation.

William H. Thomson in his monograph on "Graves' Diseases" puts forth the theory that this disease is due to a chronic intoxication secondary to gastrointestinal putrefaction, and the result of his treatment carried out with this idea in view adds weight to his assumption.

While the etiology of exophthalmic goitre is far from being proven, it seems probable that chronic infections and chronic intoxications may bear some causative relationship to the disease. While the microscopic picture of the gland in exophthalmic goitre is almost identical with that seen in thyroid hypertrophy, it would seem reasonable to consider both of these pathological changes under the one head of hypertrophy. On the other hand, exophthalmic goitre can hardly be considered a disease entity on account of its characteristic symptoms, for Dr. Halstead has found in his series that these same symptoms occur in cysts, adenoma and carcinoma of the thyroid, and also in patients with apparently normal thyroids. Again, Thomson reports 28 cases showing many of the typical symptoms of Graves' Disease, but who at no time showed either exophthalmos or marked enlargement of the thyroid.

These facts may seem very confusing, but I think one point is clear, that is, the changes in the thyroid gland in exophthalmic goitre and in other forms of hypertrophy are essentially the same as the compensatory hypertrophy experimentally produced. It would seem reasonable to assume therefore that the changes in the gland in hypertrophy and in exophthalmic goitre are likewise compensatory.

There are many theories as to the functions of the thyroid gland, one of the most attractive being that it produces a secretion that neutralizes toxins which are constantly absorbed from the mucous membranes. If this be true it seems logical to sup-

pose, that with an increase of toxins in the body there will be a call upon the thyroid for an increased functional activity, which in the course of time will lead to a compensatory hypertrophy of the gland.

Now the question may be asked, why in this condition of hypertrophy do we so often see symptoms of an hyperthyroidism, especially if the hypertrophy is a compensating process? This may be answered by considering those other processes of the body that are brought about by nature to overcome primary pathological conditions. For instance, the immune bodies found in the blood of a patient after he has recovered from an infectious disease show that these had been produced in excess. The formation of callous about a fracture is generally more than is necessary to restore the normal strength of the bone, also the profuse formation of granulations and the formations of dense adhesions and scars are a few of the many examples that show how the compensating and healing processes of nature often overstep their usefulness by reacting to a greater degree than is required. It is therefore possible that the hyperthyroidism seen in that form of thyroid hypertrophy called exophthalmic goitre is due to an excessive reaction on the part of the gland.

If thyroid hypertrophy be a compensatory process our therapeutics of goitre will undergo a radical change, and our main therapeutic measure will probably consist in searching for and treating hidden foci of infections and gastrointestinal putrefaction.

MEDICAL ADVERTISING.

BY CHARLES H. M'CULLY, M. D., OF LOGANSPORT.

Many hundreds of years ago, concerning one whose coming had been foretold, who was to be advertised over the known world, who was to heal all diseases, to restore the blind to sight, and who was to make the deaf hear, who was even to bring the dead to life again, the question was asked, "Can any good thing come out of Nazareth?" and the answer came, "Come and see." The question arose from the promptings of a prejudice founded on tradition and ignorance, and the response was the only one that could bear any weight. Neither affirmation nor negation alone could have changed preconceived opinions.

Of later years there has arisen a class who have advertised themselves as competent to effect results scarcely less marvelous, who know not failure and whose fame hath spread abroad throughout all countires. Following the precedent of the inquirer of old, with a prejudice founded on tradition you have asked, "Can any good thing come out of medical advertising?" and have met with the same response, "Come and see." Let us look this matter squarely in the face. Let us lay aside all preconceived notions, and after reviewing the situation from all points of view let us return a verdict in accordance with the facts as we find them, rendering tribute to whom tribute is due, honor to whom honor is due.

About fifteen per cent. of all matter published in the newspapers of today is advertising of a medical nature. This great display of printer's ink means something. It means a money return to the publisher; it means a money return to theadvertiser; it means that there is a demand for such advertising and the articles or services advertised, and it means that the consumer must pay the above mentioned money returns. In other words it means that in addition to the cost of service or of preparation the sufferer

must pay for fifteen per cent. of all matter published in the newspapers, to say nothing of banners, fence and barn signs, circulars, handbills and mechanical devices. He must pay for all this in order that he may know whom or what to employ to be relieved of his suffering.

The scope of affections for which a remedy or a healer may be found in advertisement is limited only by the number of ailments to which the human flesh is heir. Indeed it is hardly limited here, since in not a few instances conditions the most alarming are created in the minds of the susceptible for the sole purpose of relieving them. The greater part of the remedies and specialists advertised, however, are for the relief of the affections of the alimentary tract, the respiratory organs and the genitourinary system. That these three classes of affections should receive most frequent mention is logical, since they cover most disorders of the human organism. Prominently mentioned, too, are such indefinite terms as scrofula, blood disease, catarrh, etc., whilst cancer (by which it is presumed is meant all forms of malignant growth) is seemingly a special field for these so-called specifics and specialists.

It certainly must be gratifying to the sufferer to read with what certainty his affection can be cured and of the economy of the course, since the examination, advice and treatment are so often free; but on the other hand, it must be a great temptation to a few to bear their suffering in patient martyrdom, failing to be cured, in order to secure the large rewards for cases reported in which failure has occurred.

The extreme modesty with which the advertiser guarantees a cure of such affections as Bright's disease, diabetes, paresis, locomotor-ataxia and cancerous growths is only exceeded by the complacency with which they defy the postal laws in offering for sale sure regulators of the menstrual functions (abortants) and preventives of conception.

The natural inquiry at this point is, do the advertisers fulfill these promises? There are but two or three sources of information, namely, the assertions of the advertiser, the testimonials of

patients and friends and personal observation. The testimony of the advertiser though admissible in this inquiry can scarcely be regarded as conclusive since he is an interested party, probably prejudiced, and whose honesty has been questioned. It is true that none should know better than oneself of what one is capable, but it is equally true that one who sings his own praises does not always confine himself to truth, and one might add it is not at all probable that he will confine himself to truth. Even though he may be desirous of adhering strictly to truth, circumstance and conceit no doubt often prompt misrepresentation. Testimonials of efficiency are not lacking. Every advertiser has them in profusion, but in considering their weight as evidence one must inquire who gives the testimonial, what is the writer's motive and is he competent to judge of the matters in question? Testimonials come from every station in life, from the illiterate to the most profoundly learned. From the former nothing more is to be expected, but for the latter it is hard to find an excuse. They simply do not stop to reason matters out. The motive which prompts a testimonial in most instances is to be found either in a desire for notoriety, a desire to help suffering mankind (founded on erroneous convictions), or a money consideration. Too many people desire to see their names and faces in the press regardless of methods of placing them there. Some are unquestionably persuaded to write testimonials for a consideration, it being stipulated that these testimonials shall not be used in the home districts, whilst a per cent. are either stolen, forged or manufactured out of whole cloth. As to the competency of patients to give testimony as to cures, nothing is more ridiculous to the informed. In the first place not one patient in a dozen who comes under our observation has correctly diagnosed his case. It is not in the nature of things that he should do so. He is not skilled in the power of diagnosis, pains are often reflex, and if he is really ill he is not in a condition to think logically and to a purpose, but on the other hand he is weak mentally and physically and in a condition to readily succumb to suggestion. Indeed he may be persuaded that he has almost any malady, and if he becomes introspective and analytic in

reference to his condition, referring to symptoms of ailments, as guides to his self-examination, is likely to arrive at the conclusion he has any one of a dozen maladies, or for that matter all twelve at once. Any rational treatment of such a condition could only be found perhaps in one of the cure-alls lauded in the newspaper, and of course we have to expect a testimonial from such. The judgment is often premature, the patient only relieved rather than cured. Is it good evidence, or rather is it not the most flagrant nonsense? Any physician of experience knows that in not a few instances his greatest praise and the greatest boost to his reputation has been from some little thing of no consequence and for which he was in no manner responsible, whilst too often his very best work—work that could not be surpassed by the most careful and skilled, perhaps not equaled—has met with but condemnation. There can be only one conclusion. The sufferer is not competent to judge of his condition nor what has been effected.

Personal observation: Do the advertisers do the things they claim to do? Well it certainly must be a bad man or a bad remedy of which no good may be said. Naturally a remedy which is advertised to cure a dozen or more affections will occasionally fit a case and bring relief; but do they answer the purpose better and cheaper than a consultation with a reputable, competent physician? Certainly not, in most cases, and yet there are unquestionable cases which come under our observation which are relieved by these nostrums after skilled physicians have failed utterly. I recall a case diagnosed as tuberculosis of the peritoneum by one of average ability and as carcinoma of the pancreas by two physicians of more than average ability. The patient was reduced to about one-half his usual weight and growing rapidly more emaciated and weaker. Death seemed staring him in the face. A bottle or so of a well known patent medicine and he was rapidly convalescent. This was some eight or nine years ago, and six years later the patient was up to his former weight and apparently well. A little more than a year ago, however, he died of a malignancy manifesting itself on the back and shoulder. Did this patient find in the patent remedy a cure for what is recognized by the pro-

fession as a necessarily fatal malady or were the doctors mistaken in their diagnosis? There are numerous instances of this nature that might be mentioned, but to what purpose? The conclusion is that in some instances the advertiser is able to effect cures as promised but that far the greater per cent. of the cases he treats are only relieved, not benefited, or made worse.

If this be true one is led to inquire what creates the demand for such methods, for that there must be a demand is self-evident. Probably the greatest factor in creating this demand is the disregard of patients to the restrictions in diet, indulgences, etc., as outlined by the physician, preferring to drift from doctor to doctor, or remedy to remedy, giving no one a chance to effect a cure. Second only to the above is the desire to get something for nothing. "We'll try just a sample bottle," or "He charges nothing for examination." Closely associated with these factors are the demands for an immediate and sure relief, a fear of the knife and the pathos with which in the hopeless cases the old adage is verified that, "a drowning man will catch at a straw." In the medical advertisement all these human frailities are recognized and met. There are no restrictions; there is the ever-present trial bottle or free consultation; relief usually is promised with the first bottle, if not the first dose; there is no resort to the knife and failure to cure is unheard of.

The remedies used by advertisers are usually of the following classes, either singly or in combination: anodynes, cathartics, diuretics, stimulants or alteratives. If the patient is suffering pain he must be relieved at once or he will not give the advertiser a fair chance for cure. Most patients feel better from the action of a cathartic or diuretic or a stimulant or all combined regardless of the affection, and hence the frequency with which these are employed. Alteratives, so called, are of course indispensable. Of these remedies most are harmless in ordinary doses in most conditions, and so we hear of but few fatalities from patent medicines even in heavy doses. Anodynes, however, are not harmless, and it is not an uncommon thing to read a report of death from some such nostrum. Of these pain relievers probably the most com-

monly employed, are the opium preparations, cocaine and the coal-tar products. The danger to life of the latter and of the drug habit from the former are too obvious to require comment.

There are four classes who advertise; first, the man who without any pretentions as to special training, or being a physician, prepares and places on the market a preparation which he advertises for the cure of one or more affections; second, the man who without constituted right assumes the title of doctor, prepares his remedies and advertises them or announces his readiness to treat ailments; third, the regularly graduated physician who uses the newspaper or other device to set forth his remedies or skill as a healer; and fourth, the ethical physician. But, says someone, the ethical physician does not advertise. This is true theoretically; but practically—well I am not acquainted with any physician of any repute who lives up to the code literally. Somehow or in some way he finds a place where to his mind and practice it needs revision and he revises it to suit his own ideas and convictions. But to the point in question. The ethical physician decries advertising and denies the practice, but in some manner his calls out of the city get in the paper, his post-graduate course is mentioned, his office outfit is written up or the doctor performed this marvelous operation on such a one, or he did this or he did that, his name always in the paper. Why, it has been but a short time since the most earnest advocate of the code was always mentioned as usher in connection with the newspaper report of his obstetrical cases. The reporters have a way of saying the ethical physician is always out for free advertising, but when it comes to a paid local or display he always takes refuge behind the code.

The man who represents the first class of advertisers above mentioned lays no claim to association or relationship with the profession. His is a business, and in the degree in which he conducts his business on principles of honesty and right, is he entitled to the respect and courtesy of the profession. He of the second class bases his claim for recognition and business on a false statement and is of course not entitled to the respect and confidence of honest men, whether in the profession or out of it. The doctor who

resorts to advertising methods places himself in competition with the man who conducts a business and the man who bases his claim for recognition on falsehood. If he competes with them he must offer as much, else he can not expect preference. If he offers as much as these he offers what he knows he can not fulfil; he becomes dishonest and is not entitled to the respect, confidence and fellowship of the profession. To be plain, I do not believe it possible to do an advertising business, successfully competing with the first two named classes, and be strictly honest and fair. As to whether the ethical physician should use remedies so advertised is a question. That most physicians do use them is no question. Most of us at times say to our patients they shall go on using certain well known patent medicines, that they will answer the purpose as well as anything. Some of us—most of us—do these things and cry out against the use of patent medicines and advertising, declaring we will not use anything of which we do not know the formula. I doubt if there is one of us who does not at times resort to mixtures of our own or drughouses, the formula of which we could not give accurately if called on at the time of prescribing, to say nothing of preparations on the market the exact formula of which we have no means of knowing. It is useless to specify. You all have them in mind. Surely we ought not to be so unfair. We ought to be just. We ought to place censure where censure belongs—condemn wrong methods and wrong preparations, and if we restort to patent or proprietary preparations let us be honest enough to admit it or if we condemn all patent remedies, let us use none. But this latter course is not open unless we include some of our most valued preparations, many of which are prepared by patent methods. Is it not time for more thinking, and less talking along these lines?

It is true the ethical physician may at times suffer some loss of business by refusing to advertise. But recently the most competent man in Northern Indiana to do a certain operation was accosted in this language. "I did not know whether you was competent to do the operation or not having never seen your advertisement in the paper." It is also true that if one is to retain his

self-respect and the confidence of the people, if he is to win in the end, he must not resort to advertising as a means of securing business. He must not debase his profession to the level of a business, and a dishonest business at that. Rattlesnakes, printer's ink and mechanical devices should be beneath his dignity. Never was the admonition of the wise man more applicable than in this twentieth century, "Let another man praise thee and not thine own mouth."

ETHER ANESTHESIA.

BEN: PERLEY WEAVER, B. S., M. D., FORT WAYNE, INDIANA.

It would be fallacious for anyone, no matter how great his experience on the subject, to insist that we have at the present time any single agent that would meet each and every indication and not one contraindication for anesthesia. But the writer has thought that it might be of interest to devote a few moments of your time to a consideration of what might be deemed the present status of ether in general surgical anesthesia as compared with that of the other most common anesthetic, chloroform. Not that there is any anticipation toward changing the opinions of those who may already have settled the question in their own minds, but with an endeavor toward a fair consideration of some of the more recently published observations upon the subject, and this in spite of the view as lately expressed by Royster in the February "Surgery, Gynecology and Obstetrics," that the "old question of chloroform and ether has been discussed and settled a thousand times and in a thousand different ways, and all of us still feel as we did before," thereby resembling membership in a church or political party.

Let us begin, then, by considering the physiological action of the two drugs. Ether, like alcohol, is primarily a diffusible stimulant. It increases arterial tension and acts as a cardiac stimulant, the heart, as a rule, continuing to beat after failure of respiration. On the nervous system its paralyzing effect is exerted first on the cerebrum; next the cerebellum, then the sensory, and later the motor functions of the spinal cord; then the sensory and finally the motor center of the medulla oblongata. It is eliminated chiefly by the lungs and kidneys unchanged, and, to some extent, by the liver and skin. Chloroform, on the other hand, after a brief period of stimulation, acts as a sedative and, in

overdose, as a cardiac poison. Embley, of Melbourne, rather recently presented an extensive contribution in the British Medical Journal on the causation of death during the administration of chloroform, the results of numerous experiments on dogs. The attention of the investigator was directed particularly toward those cases of sudden death occurring in early chloroform anesthesia (and this seems to be the common time during anesthesia for chloroform death). The point is proved that death is due to the action of the vagus on the heart, causing stoppage of that organ, followed by respiratory failure. Division of the vagus in the dog promptly restored the circulation, followed by respiration. And Mayor, in a recent number of the "Presse Medicale," declares that in cardiac failure from chloroform, artificial respiration and other means commonly employed in ether poisoning are absolutely ineffectual; the only means of restoring heart functions being by direct massage of the organ, and from this the results to date are not very encouraging, no case being known in which the patient survived more than twenty-four hours after his resuscitation.

It is from a detailed and comparative consideration of the post-anesthetic effects of each of the two agents that the most important conclusions can be drawn at the present time. First, upon the blood; DaCosta and Kalteyer, from a series of observations, conclude that the average loss of hemoglobin under ether anesthesia is three per cent., reduction of color index of eight per cent., increase of erythrocytes one hundred forty-three thousand three hundred and sixty (143,360), and increase of leucocytes 4,586—the increase in the cellular elements doubtless being due to the increased concentration of the blood. Mellish thinks there is little room for doubt that chloroform combines with the erythrocytes, causing death of a considerable number of them and marked lessening of the hemoglobin. Mikulicz in 1890 noted a hemoglobin reduction of from five to ten per cent. following chloroform administration. In 1893, as a result of experiments, Garrett and Oliver concluded that anesthetics, particularly chloroform, deoxidize the blood and tissues, thus producing malnutrition and quan-

tities of waste products, the elimination of which causes a severe, and possibly a fatal, strain upon the excretory glands. Secondly, upon the kidneys and liver, and it is to a consideration of this point more than any other that I wish particularly to draw your attention. Mellish believes the consensus of opinion to be that while ether causes more or less kidney irritation during its administration, this effect is of short duration in the kidney not seriously diseased. From his records of one hundred cases where the urine was tested before and after etherization, in only one was there a trace of albumin after anesthesia where none had existed before, and in no case out of several hundred etherizations was there any noticeable post-anesthetic renal trouble. In this connection the writer wishes to mention a case in which he recently had occasion to carry under ether for two and one-half hours an old case of chronic diffuse nephritis, for the radical cure of a double inguinal hernia, and in this case there was no noticeable post anesthetic renal disturbance. Mellish found albumin in six per cent. of fifteen hundred cases after ether narcosis, where none had been present before, and casts, hyaline, granular and epithelial, were found in a large proportion of the cases, unaccompanied by albumin. The casts and albumin disappeared rapidly. Beck found nine per cent. albuminuria following ether, from a series of three hundred nonalbuminurics. Trieber and Roux examined several hundred cases and failed to find albuminuria. Korte found albumin in one per cent. of six hundred cases, Butler only once in five hundred cases, Eisendrath six per cent. in fifteen hundred cases. John G. Clark finds that ether rarely produces serious kidney lesions if the anesthesia is in skilled hands. Renal insufficiency with a small trace of albumin he believes to be much more significant of danger than a considerable amount of albumin in an approximately normal quantity of urine. Monroe in 1903, before the American Surgical Society, reported a series of five hundred cases showing albumin and casts in urine, subjected to ether, and in none of them was it noticed that any renal damage was done. Weir believes that ether has no marked effect upon healthy kidneys, that it is safe in slight kidney disease, and that circu-

latory disturbance which may arise in the kidneys quickly subsides. Leppman, after an experimental research, confirms the conclusions of Lengemann and others that ether has no special degenerative action on the healthy kidneys. At any rate, such changes occur very seldom and only to a slight degree. Mellish thinks that the same may be said concerning the liver. One fact must ever be borne in mind, viz., that all anesthetics are toxins and exert a marked influence on the general metabolism. Offergeld and Muller agree that any anesthetic produces definite changes in the cells of all the internal organs. Jacquet from a study of the literature of the past decade concludes that ether does not have such an injurious effect as chloroform on the parenchyma of the various organs when the narcosis is prolonged. Bloodgood and others find this cellular change to be a fatty degeneration, and it is in this connection that the most important observations of the past few years have been made in anesthesia. This fatty degeneration, occurring particularly in the liver, is undoubtedly responsible for the condition which has become known by the names of acid-intoxication, acidemia, aciduria, acetonuria and acetonemia, and whose symptom complex so closely resembles that of acute yellow atrophy of the liver, uremia, eclampsia and acute phosphorus poisoning. The most important recent observations upon this subject, perhaps, are those of Bevan and Favill, whose deductions will be dwelt upon more in detail later on. Suffice it to say at this point that their experience has been that although the condition does occasionally follow the administration of ether, yet it is very rare, and when it does occur after ether the symptoms are of a mild type. In "The Annals of Surgery" for February, 1905, James A. Kelley reports observations upon four hundred surgical cases in which symptoms of acid intoxication occurred forty-six times. In but sixteen could the ether have been responsible for the phenomenon. In these sixteen the symptoms were mild in all except one, and in the light of our present knowledge it would have seemed a miracle had this patient escaped the condition, having been etherized three times within a period of seven days. And here it may be appropriate

to refer again to the findings of Offergeld and Muller in regard to repeated narcosis, viz., that a second anesthetic within six days of the first, or before regeneration is complete, is much more dangerous than two narcosis with a longer interval. For this reason they condemn the usual gynecologic procedure of examination under anesthesia to be followed in a day or two by operation. Upon the respiratory tract ether is a distinct irritant and markedly increases the secretion of mucus, the degree of irritation, Mellish thinks, depending much upon the technique of the administration. Pulmonary edema is present during and for several hours after the administration of ether and the possibility of hypostatic and aspiration pneumonias is increased. Naturally, suppurative lesions of the mouth and pharynx enhance the danger of aspiration pneumonia; and that the nature and extent of the operation play an important part in the production of lung complications is proven by the cases of such complications following celiotomies and operations on the mouth, neck and thoracic cavities under local anesthesia. In the "Annals of Surgery" for January, 1906, Pederson reviews the literature on the subject of pulmonary edema following ether, with a report of sixteen cases, in which death may have been due to the edema per se in twelve cases. From these he concludes that the best prophylactic measures are certainly deliberate uniform administration and the most adequate possible protection of the patient from the draughts and changes of temperature during the stage of perspiration in convalescence. Upon the cardiovascular system ether produces a temporary rise in blood pressure, followed by a moderate and gradual fall; dilation of the capillaries; increased vascular tension but no marked degenerative changes in the heart. Chloroform, on the other hand, besides producing, as MacWilliam of Aberdeen has shown, considerable dilation of the heart, results ultimately in fragmentation of the cardiac muscles, fibers and fatty degeneration of the cells, as proven by Frankel. Worderbrugge has recently reported two cases of serious after-trouble with chloroform in moderate dosage—one fatal, showing post-mortem, fatty degeneration of the heart, liver and kidneys; in the other, long persistent albuminuria

and hemoglobinuria. Lengemann proved by experimenting on dogs that although enough chloroform to induce narcosis was sufficient to produce this fatty degeneration, yet the condition was most apt to follow prolonged or repeated chloroform anesthesias. Albuminuria following chloroform anesthesia was found by Eisendrath in fifteen per cent. of 650 cases where it had not existed previous to the narcosis. In seventy cases of chloroform anesthesia reported by Patien, twelve per cent. showed albumin before, fifteen per cent. during, and seventy per cent. after anesthesia. The casts and albumin usually disappear rapidly, but Eisendrath and others find, more quickly after ether than after chloroform. In Wechsberg's series of one hundred cases he finds in the urine following chloroform administration, biliary pigment in sixteen, with icterus in most of these, indicating liver derangement. Doubtless this condition was analagous to, if not identical with, the hepatic insufficiency or acid intoxication above referred to and so admirably described by Bevan and Favill, as mentioned before. Inasmuch as this condition bids fair to become the most important cleavage point in the selection of a general anesthetic, the writer feels warranted in reviewing somewhat in detail the conclusions of these observers, trusting that perhaps at least a few of you either do not recall the contribution, or did not at the time of its appearance take especial note of it. From their observations and a review of the literature on the subject, certain final deductions are made, some of which are as follows:

1. Anesthetics, especially chloroform (ether to a very limited degree), can produce a destructive effect on the cells of the liver and kidneys and on the muscle cells of the heart and other muscles, resulting in fatty degeneration and necrosis, very similar to phosphorus poisoning.

2. The constant and most important injury done is that to the liver.

3. This injury to the liver cells is in direct proportion to the amount of anesthetic employed, and the length of the anesthesia.

4. There exist both an idiosyncrasy and a predisposition to this form of poisoning, under the latter being included early age, low-

ered vitality as from diabetes, previous recent anesthesias, pus infections, diphtheria, intoxication from a dead fetus in utero, a gangrenous mass in the abdominal cavity, exhaustion due to hemorrhage or starvation, cachexia, lesions resulting in fatty degenerations as occur in the limbs in infantile paralysis, and chronic diseases involving both liver and kidney, such as cirrhosis and nephritis. (To these might be added certain cerebral traumatisms as brought out by Kelly, above cited.)

5. Resulting from this fatty degeneration and necrosis of liver cells, there arise certain toxins either by secretion from the perverted liver cells, or from impeded elimination, which give rise to a definite symptom-complex, making its appearance from ten (10) to one hundred and fifty (150) hours after the anesthesia, and consisting of vomiting, restlessness, delirium, convulsions, coma, Cheyne-Stokes respiration, cyanosis, icterus in varying degree, and usually terminating in death. As by-products in this toxemia are found acetone, diacetic acid and betaoxybutyric acid in the blood and urine.

6. Similar hepatic toxemias resulting from fatty degeneration of the liver cells and with similar symptomatology occur, as phosphorus poisoning, diabetes, puerperal eclampsia and acute yellow atrophy of the liver.

7. This serious hepatic toxemia almost invariably following chloroform rather than ether anesthesia (ether seldom producing a fatality from this cause), and frequently making its appearance late, has impressed upon the observers the necessity of still further limiting their use of chloroform as a general anesthetic.

In this connection the writer wishes to suggest the incompatibility of the administration of chloroform instead of ether in labor, and particularly in eclamptic cases. Its only indication might seem to be the old Hahnemannian dictum of "similia similibus curantur," for certainly one could not ask for a more typical predisposition for this hepatic toxemia than has been pictured to us in the modern conception of eclampsia, viz., distinct liver insufficiency.

Hutchinson very pertinently suggests this as the probable cause

of the unexpectedly bad results following operations for gall-stones, the liver being already disabled and in poor condition to resist the attack of the anesthetic.

Regarding the effect of chloroform upon the respiratory system, Mellish thinks that besides its direct irritating effect during inhalation and elimination, it undoubtedly lowers the physiologic resistance and leads indirectly to the occurrence of bronchitis and pneumonia.

That post-operative nausea and vomiting may be due as much if not more to the constitutional effect of the operation itself, associated with the pathologic condition present, as to the anesthetic is pointed out by Holmes in the "American Medicine" for December 23, 1905. Bearing on the old tradition that nausea and vomiting are more frequent after ether than chloroform, he cites his observations in one hundred cases of ether and fifteen of chloroform anesthesia. In the ether cases thirty-four per cent. were altogether free from nausea and in seventy per cent. the vomiting was inconsiderable, while with chloroform twenty-five per cent. were free from nausea and in only thirty-eight per cent. was the vomiting inconsiderable. The average time for the post-operative nausea to be complained of with ether was five and one-half hours, with chloroform twenty-two and one-half hours. And this agrees with the opinions of other writers of today, viz., that vomiting is fully as frequent and much more persistent with chloroform than with ether. In the prevention of this unpleasant post-operative condition many agents have been suggested, such as gastric lavage, vinegar inhalation, ice to the epigastrium, strong coffee, cracked ice in the mouth, previous administration of chlorotone, inhalation of menthol or oil of peppermint. The only observations the writer has made with any of these agents have been with vinegar inhalation, which was tried in a series of fifty consecutive cases, followed by a control series of fifty cases without the vinegar. In all of these hundred cases the method of administration was the same, the open method with the Allis inhaler, with the preliminary injection of one-eighth grain of morphine and one two-hundredth grain of atropine. The average total time of administra-

tion in the first series (i. e., the one with vinegar), was 74.06 minutes and the average amount of ether given was 176.14 grms., or 8.45 ounces by volume. In this series fifty-two per cent. had no vomiting. In the control series, the average total time was 81.56 minutes, and the average total quantity of ether was 182.71 grms., or 9.06 ounces by volume. In this series forty-two per cent. did not vomit, thus showing a difference of ten per cent. in favor of the vinegar. Good results are claimed from gastric lavage and a similarly checked series with its use would be interesting.

The questions of the influence of age, sex, personality, alcohol, tobacco, general physical condition and many others are not here touched upon for want of further time.

The conclusions that the writer would wish impressed upon you are that, aside from the enormous disparity in the estimated mortality rates, the relation averaging about one to five in favor of ether, the post-anesthetic effects from etherization, be they what they may, are, in almost every condition, of a milder type than with chloroform; and that probably the most pernicious of these is that of fatty degeneration of the liver, kidney and heart muscle, so much more common after chloroform.

DISCUSSION.

Dr. F. W. Shipp: It seems to me that this is a matter that surgeons wofully neglect. At our medical colleges little is done to teach the students to give an anesthetic or its effect. A large majority of the students go out without ever having given ether or chloroform, and their knowledge of this drug is little more than that of persons outside of the profession. It is a source of wonder to me that the famous surgeon who demands that his assistants be professionals, that they be trained for their work, will trust his anesthetics to a man who has had no experience along that line. I feel sure that when a surgeon realizes that many of the post-operative complications, such as nausea, etc., is due to this, and when they realize that their mortality rate will be de-

creased if they demand men of some ability, we will then have rapid strides in anesthetics.

Dr. Weaver's paper goes quite a way to convince all of us that ether should be the anesthetic of choice in at least a majority of cases, chloroform being used in only those cases where it is positively indicated. I am also convinced that the point to be considered in the choice of an anesthetic is the danger to the patient. If the condition of the patient is such that one increases the danger to the patient's life, then it should not be used; if ether is most dangerous to the patient, then it should not be used, and if chloroform is most dangerous to the patient, then it should not be used. I think that in the large majority of cases ether is the anesthetic of choice. There is no argument that could be brought to bear that would cause us to use chloroform in all cases; ether is just as easily given and if properly given certainly the post-operative complications are none. But granting you that there are as many deaths from ether as from chloroform I still contend that ether should be the anesthetic of choice. When a patient dies before an operation is begun, or dies on the table, you do surgery a very great harm, much more so than if the patient lives for two or three days following. As one doctor has said, "Give the patient a chance to tell his friends good-bye."

I want to commend Dr. Weaver on his very excellent paper on this subject.

Dr. David Stevenson, of Richmond: I would like to say a word in regard to giving ether. There is a difference in regard to the methods of giving it—first the closed, then the open method. I think that most of the Indianapolis physicians use the open method, but I have entirely given that up and think that the closed method is much the best. The men who demand the biggest pay in the world are the men who use the closed method. There is no doubt about it, when you are giving by that method you are using carbonic acid gas. It is the cheapest anesthetic we have and I think it is one of the very safest. It may make a patient have a funny color at times if you push it for a time, or something like that, but they will come to and rally from under

its effects quicker and better than from any other anesthetic; indeed, carbonic acid gas is the only natural one we have, for we use it from the time we are born. I would almost agree to take any man in this room and put him thoroughly to sleep with an ounce of carbonic acid gas with the closed method, and I think a half ounce would do it. You could not begin to do that with the open method, for it takes on an average eight or ten ounces. When you use this gas there are plenty of signs to let you know when the patient has had enough and when there is any danger at all. It is very easy to let them have more air if you are not satisfied with the color. In giving an anesthetic I think the first thing is to overcome the resistance of the patient as quickly as possible, get it entirely put away. In giving ether by the open method the free breathing of the patient is interfered with and that does not help overcome the resistance; there is no struggling with my method. I will admit that with some patients the open method works beautifully, but I think the closed method is really very much better. I am sure a great many of you will differ on this point.

Dr. T. B. Eastman: I was very much interested in this paper and I am only sorry that the doctor did not deal more with his own observations, for we know that he has had a large experience, and those are the people that we want to hear talk.

I agree with the doctor that ether is the anesthetic of choice, and I believe that when one knows how to give it that he will give it in preference to anything else. The great trouble with the average anesthetist is that he knows nothing about it. I am not at all pushing ether to the exclusion of chloroform, but the old saying that ether is hard on the kidneys and chloroform is not, in light of the latest experiments, has been simply done away with. I am rather surprised that my friend Dr. Stevenson takes the stand that he does. He says that he uses carbonic acid gas. Well, carbonic acid gas poisoning is the most horrible thing you ever saw; it is terrible to see a patient brought to a table the color of a plum from carbonic acid gas poisoning, and it is also the sign of a mighty anesthetic. He says that it takes about

eight or ten ounces of ether to put a patient under. Well, by his closed up methods of carbonic acid gas poisoning I dare say it may take that much ether, but as a matter of fact two or three ounces is enough to put a patient under by the open method, and that is unquestionably the method, for the patient will go under quicker. I believe that Dr. Shipp in his report of some three hundred cases where he used the ether anesthetic said that the average time was one and one-third minutes, and I don't believe that could be equaled by carbonic acid gas. Ether properly given is not followed by nausea; there is no necessity for it after having given an ether anesthetic. We all know that a patient is anesthetized by the vapor of ether except in Dr. Stevenson's method, and we all know that ether dropped on a dry surface, or any cold substance, evaporates more rapidly, and therefore we will get the effect much quicker.

Dr. G. W. Spohn, of Elkhart: Everything seems to point to ether. The chloroform man has not arisen yet, and probably won't. In some cities nearly all of the physicians use chloroform and in others ether, and the men who use the chloroform are not losing any more cases than those who are using ether. There has been a great deal of objection to this for the nose, ear and throat, for it usually takes some time to do this. As Dr. Shipp stated, most of the students in our hospitals and various places do not know how to administer these things. I called a man into my office who had been administering anesthetics for eighteen months for Dr. Murphy of Chicago, and we all know that he uses ether by the drop method entirely, and to my surprise this man knew nothing about chloroform. I was going to operate on the tonsils of the patient, but this man found something wrong with the heart—there was nothing there, that was his excuse—and he was afraid to give chloroform to the patient, so he gave ether. This man took to vomiting. Dr. Eastman says that this is not necessary.

Dr. Eastman: That is what I said, and it is not true?

Dr. Spohn: I thank you. I have seen chloroform adminis-

tered in a good many places in different hospitals, and if you give ether they should take to their bed for at least twenty-four hours right after that, and for this reason you should not do it in an office, for it is not practical. I still think that the general rule is that the majority of the patients will vomit; some will not and some will with chloroform. Now, for the tonsils I think that the chloroform is most practical, and as Dr. Shipp has said, a man wants to know how to give it. A man from Chicago two years ago who had been used to giving ether exclusively was asked to give chloroform in a hospital to a patient that could not take ether. He tried to give it, and what was the result? He had never given it, and he pushed it forward with such rapidity that the patient came very near dying, and they had quite a time restoring that patient, and then they had to give ether and take the chances. I saw the same man give ether, and he did the finest work I ever saw; I never saw such beautiful work; he got the patient under the influence in a very short time—in from a minute to a minute and a half. Now, he was educated in ether, but not in chloroform, for he was a total failure in that.

Dr. J. J. Kyle: I must take issue with Dr. Spohn, for I object very seriously to chloroform as an anesthetic. Of course, this may come from my association with men like Doctors Noble and Eastman and Clarke, and secondly, from association with a great many men in my department and learning of their experiences that I have come to fear chloroform, especially in children. I, too, do not think that we should administer an anesthetic in the office of a physician, but if this is necessary the patient should be taken to the hospital where there is every advantage for resuscitating the patient in a dangerous moment.

Dr. Porter: Let us look the facts squarely in the face. Of the man who can give chloroform the best, and the man who can give ether the best, of the two, the man who uses the chloroform will lose three patients to one where ether is used. The men in this day and age of the world who say that chloroform is preferable to ether and use it before ether is taking an unwarranted lib-

erty with human life. Some of us have been experimenting with some of these newer anesthetics. If chloroform kills at all it does so in nine cases out of ten in a short time. The man who gives it because he is afraid to give ether does not know the effects of the two drugs.

Dr. Spohn: When a doctor thinks that chloroform is less likely to do harm than ether he does not know, that is all. The facts are overwhelmingly in favor of ether being the safer of the two so far as serious lesions are concerned. And in view of this I think we can afford to spend a few more minutes or seconds with it than with chloroform.

Now, in regard to the anesthetist. I heartily agree with Dr. Shipp, for I think it is a common thing to allow anyone to give the anesthetic, and if you take an anesthetist along with you it should be a person that can assist you. So far as I am concerned most any one can assist me in that sort of an operation, but I like a first-class man to give my anesthetic. I have had three men in my employ for that purpose during the last twenty years. I had the third man under the tutorage of the second man for three months before I allowed him to give a single one in any form, and at the end of that time he began to give my anesthetics, but not until that time.

Dr. Page: I have heard this question of anesthetics discussed vigorously and violently a great many times, and we all have our different viewpoints in looking at this question; those that have respiratory work have a different viewpoint from those who are working in other places. I have cases on record where I have not fully made up my mind as to which is the proper one to use, but if I have some one that is skilled in giving chloroform I feel just as certain and sure as I do when ether is being administered. When tonsils are removed it is a very bloody operation. Often this blood will clot in the larynx in children, and in one case on which I was operating there was a clot of blood here which might have proved fatal, but I pushed it out of the way and the respiration started up immediately with no further trouble. I think it

requires more experience to give chloroform than ether, but when it is given properly and the patient is properly prepared for it, I think there is as little danger from it as from ether.

The doctor's paper was an excellent one and brought out a good many points that we ought to know. I do not think we can settle this question now; we like to hear of the personal experiences of others, for they are of value to us, but we can not determine which anesthetic should be used.

Dr. Noble: As Dr. Page has stated, it is knowledge that we get by experience and it is the weight of experience that wins. All of my professional life I have been thoughtfully considering the question of anesthetics, and until recently I have been in the condition that our profession has been in largely, a condition of unsettled judgment regarding the choice of anesthetics, but now I am ready to make a choice; I have had experience sufficiently long to teach me which of these anesthetics to chose. I can not add anything to what has already been said in reference to the choice of ether over chloroform, nor can I add a great deal in denunciation of chloroform as an anesthetic other than that of my individual experience. It is this: I have not had any bad results either in the lungs or kidneys from the use of ether; I have never had a death from any anesthetic, but I have been almost frightened to death myself during the administration of chloroform and I never was with ether. The only two deaths that I ever had that might have been attributed to the use of an anesthetic was following the administration of chloroform; one was in pneumonia and the other in nephritis. This happened in the days when I allowed the man who gave the anesthetic to make the choice; I was disposed to allow the man to give the anesthetic that he felt the most certain in giving. Now I will not do that, and you are to take my experience for what it is worth, for I am an individual unit in this argument; but my experience has been that chloroform is infinitely more dangerous in every way than ether. It is more dangerous immediate and it is more dangerous removed. I mean that it is the unsafer of the two anesthetics.

I agree with Dr. Kyle in regard to administering anesthetics

in an office. Now, in days gone by I have had some experience in removing tonsils—work in the respiratory tract. I never was a specialist along that line, but I have had considerable experience in that field, and I would not give an anesthetic there.

Dr. Cline, of Indianapolis: If you will permit me I should like to digress from the subject a little bit. We have been talking about the removal of the tonsils and I think that is a subject of most importance because we are all more or less doing this kind of work, and it has been considered a minor operation, one that can be done almost everywhere or anywhere if we understand it, but I want to take the floor to say that you should not in the majority of cases give an anesthetic for the removal of the tonsils, for if you do you subject yourself to criticism and possibly to death, as Dr. Porter has said, unnecessarily. I know that there are men on this floor that will take the opposite side, for I have been in this discussion time and time again, and I have been come down on like a thousand of bricks, gentlemen. Not long ago I had the pleasure of reading a paper in Chicago, and introducing it for discussion. Out of sixteen members of the society four said that they had had deaths from chloroform and that they were opposed to the administration of chloroform in these cases. Now, that shows you what will happen. We do not know what will happen. If we would study these cases I believe, and not go into them with the idea that we have to give chloroform, for I claim that the operation can be done without it with less shock from the operation than from the chloroform. I want to say again that the shock will be less from the operation than from the chloroform as a whole. I went out of the city not long ago to remove a tonsil and I was asked what kind of an anesthetic I would use. I told them I would do the operation without an anesthetic, and inside of two minutes it was all removed and in my hand and the patient said that he did not suffer scarcely any pain at all. I claim that these operations can be done in a majority of cases without an anesthetic, and the persons that constantly use them are liable to death. I should like to be put on record, for I have been practicing for fifteen years and have done lots of operating of all

sorts, and I want to say to you that you do not need an anesthetic. I was talking with one of the leading doctors in New York City, and I asked him what kind of an anesthetic he used in the majority of cases, and he told me that he never used any in order to get away from the hospital as quickly as possible. I then asked him what he used in his private practice, and he told me that if he was going to operate on his own child that he would not use any anesthetic at all. Dr. Phillips is the man, and this is the thing in a nutshell. He would not use an anesthetic because the shock of the anesthetic is greater than the shock without it.

Dr. Layman, of Indianapolis: There is one point that I would like to mention, and that is the use of ethyl chlorid. Dr. Peterson uses this method. It is a new method that has just come to the front within the last year; in fact, it has become so popular in New York City that a firm there has begun the manufacture of the ethel chlorid tubes which before have been imported for special use in the closed method.

In speaking of the two methods I would like to say that I think Dr. Stevenson was right when he said that the closed method was undoubtedly the safest of the two. It has been proven by statistics that breathing the air that has been thrown back and forth through the bag is less effective than the system of the open method of dropping ether whereby they breathe the cold ether and it chills the lungs. Also in using the ethyl chlorid you do not have to use so much ether. The patient does not become saturated and that avoids all of the sequela. You will find this in long cases where they have had to administer large quantities of ether. If none of you have tried this method I think it would pay you to try it. It requires special bags. You will have to use one in which you drop the ethyl chlorid drop by drop, and the bag has to be one where the tube is broken within and then is followed closely or rapidly by the ether. If professional anesthetists highly recommend this method it must be one that should command our attention.

Dr. Shipp: I have been using ethyl chlorid with the spraying method and I have had excellent results; the patient usually does

not struggle, and while it lengthens the time of the anesthetic it overcomes the first state of excitement or unpleasant symptoms from which the patients suffer. I should like to say a word about the closed and the open method. The patient gets more ether by the closed than by the open method. You get more ether into his system by the closed than by the open method. You lose a great deal in getting it in by the open method, and I wish to say that a surgical anesthetic can be produced with an ounce of ether very easily with the open method.

Dr. Squires, of Brooklyn: I can endorse almost everything that has been said this morning from observation and experience. I think that the men who are certain of chloroform should use chloroform, because they know how; and the men who are certain of ether should use ether, because they know how. I do not think Dr. Porter ought ever to use chloroform, nor Dr. Stultz to use ether, because they don't know how. I believe that one is just as safe as the other if a man knows how. I have seen good men give chloroform in hospitals for fifteen years and they would not give anything else, and I have seen just as good men give ether and they would not give anything else. What is the difference? They know how, that is all.

Chairman Clark: While this is a very interesting subject I feel that we had better call on Dr. Weaver to close it.

Dr. Weaver: It strikes me that this question is a large one, and as I stated in the beginning of my paper, we might talk on it until we are blue in the face and everyone will stick to his choice. My experience has been decidedly in favor of the open method, and for the present I hope it shall remain so. I have seen a few of the acid anesthetics given and I must say that when we can prove that we can get our patient under the influence with as little struggling and with a great deal more safety with the plain ether method I think that should be used. I am aware of the fact that practically all of the physicians in New York use the closed method exclusively, but I think that there are anes-

thetics used outside of New York in somewhat greater numbers than in New York, and by people I venture to say of larger experience. Miss Alice McGall of the Rochester Hospital has reported eleven thousand cases without mortality; it may have reached the fifteen-thousand mark by this time, and she uses the open method entirely and describes her method in the New York Medical Journal of 1904.

So far as the expense of ether is concerned I think that Dr. Shipp is right and that the anesthetist who is experienced can give just as little by the open method as by the closed. I think there is no question if we look at this in a fair-minded way as to the relative danger of ether and chloroform. Certainly the man with more experience with chloroform will have less trouble, and the only fair way to look at this is to look at the statistics of the men who have looked into the pro and con of this question, and you will find that they give the mortality as one in two thousand for chloroform and one in twenty thousand for ether. I think a fair estimate would be one to five thousand in chloroform and one to sixteen thousand for ether. From what I have been able to learn I think this would be a fair, conservative estimate.

NASAL OBSTRUCTION.

BY DAVID STEVENSON, M. D., OF RICHMOND.

The individual with open mouth, vacant stare, carrying a drop suspended from the extreme end of the nose, always appeals to our sympathy. These persons get so tired using the handkerchief that they become confirmed drippers and represent the worst type of nasal obstructionists. There is, however, a very much larger class in every community who suffer from nasal obstruction, but who do not know it. They can generally force air through the nose. They complain of their catarrh, but believe they can get all the air through the nose needed for their economy. While the nose may be permeable, yet it is insufficient. Put such a person on a bicycle and his mouth will be open half the time. Great gulps of air are swallowed through the mouth as he proceeds. Indeed, many of these persons can not walk fast for a block with closed mouth without feeling a great desire to open it. Many such persons often acquire the habit of listening to public speakers with open mouth. They hear better in this awkward position.

Until six months ago the writer believed he had an efficient nose. Merely from a scientific standpoint, the trial was made of placing a small piece of adhesive plaster over the mouth and trying to sleep throughout the night. But he was awakened every time by insufficient air and found that the adhesive had been involuntarily stripped off. Since that time an operation removing a portion of the inferior turbinate on one side and a portion of the middle turbinate on the other has made it possible to sleep with the greatest ease throughout the night with tightly closed mouth.

In childhood nasal obstruction is generally caused by enlarged tonsils and adenoids. The tonsils lift high the palate against the offending adenoids. The result is deformities of the nose, palate, alveolus and teeth. A high-arched palate leads to lessened space in the bony structure of the nose.

Even with such a common infirmity, it is well to review at times some of the symptoms of a disease which so destroys human beauty and renders the patient often hopelessly deaf from otorrhea or chronic catarrh. The large, expressionless eyes covered with drooping lids, the parted lips, the driveling mouth, the pinched nares, the noisy respiration, the nasal intonation, the listless, absenet-minded, inattentive mentality, stamp the disease as a marked case of adenoids. The history tells us there is often nocturnal eneursis and diaphoresis. Restlessness at night with intermission of nightmares and dreams, often found in all forms of nasal obstruction, is due to the irregularity of nasal breathing. While there are many cases of adenoids which have none of the above mentioned symptoms and which can only be diagnosed with the mirror or palpation, yet they cause deafness and impoverishment of the health.

If the adenoids and tonsils are carefully removed in children it is only exceptionally that the turbinates will need operation; but in many cases, no doubt, the adenoid operation is not considered a success, because the posterior ends of the turbinates are swollen and need partial removal.

The ideal nose means that the septum is practically a vertical plane and that all the turbinates do not press either the septum, the floor of the nose, or any portion of the nasal cavity.

Many turbinated bones are warped and crooked and sometimes so curled that their lower border lies in contact with the external wall, or the septum, or the floor of the nose, or with all three.

When a farmer has cattle whose horns are so curled that they press into the flesh he generally removes part of the horns with a saw so as to prevent suffering and inflammation. In the same manner it may be advised that when the turbinated bones are enlarged, a portion should be removed by a careful operation. It is foolish to expect that the cautery will relieve such cases of bony growths.

It is a well-known fact that in cases of ingrowing toenail the inflammation causes the nail to grow wider, so that sometimes it has twice the width of the other nail. It would be unwise to expect help from sprays, etc., in such cases.

In the large percentage of cases of hypertropic catarrh there is a proportionate enlargement of the bony structures which can only be relieved by an operation. The use of sprays in such cases would be about as much use as the vagaries of Christian science. Sprays may be of a little help in preparing for the operation as well as furthering the after healing, but otherwise they have only a psychic effect.

The curves of the turbinates may well be compared to the mould board of a farmer's plow. One edge is attached and the other is free. Now, when the free border rides on the floor of the nose air can not pass to the external side of the turbinate, therefore the mucous membrane on the external side is entirely wasted. Moreover, when the patient blows the nose, the secretion is forced forward where it can not get out, right adjacent to the opening of the lacrymal duct. Many inflammations and suppurations in the lacrymal duct are due to this cause. The lower part of the nose becomes a water-logged basin which can not be drained, but which is an ideal culture bed for germs. If there is further obstruction at the back of the nose the only possible chance for drainage is forward and the patient becomes a chronic dripper, a slave to the handkerchief habit. It is generally true that in these cases if they are severely cauterized the patient has a temporary relief from the contraction, but he returns in a year or so stating that he is not much better.

The scarred groove becomes filled up with cicratrical connective tissue, while later the adjacent parts soften so as to leave the condition unrelieved. But if instead of this by a clean and smooth operation a sliver of the turbinated bone is taken from the whole lower edge there will result the adhesion of the mucous membrane to a bone scar so that there is a permanent cure with complete satisfaction to the patient. The operation on the bony bends and curves will vary widely in different cases. These must be so treated as to leave the ideal nose which automatically afterwards is able to take care of itself; the area of the nasal channels being such that for 24 hours during the day the patient will not starve for the air which has rightly been termed heaven's food and which is obtained without money or price.

It is believed there are over 20 square inches of mucous membrane in the nasal cavities. If merely the lower edge of the bone is carefully removed, the absolute promise can be made that the moistening and warming qualities of the nasal cavities will be all sufficient. There is nothing that does so much good for catarrhal conditions of the naso-pharynx, throat and ears as these delicate operations. The good effect is seen for years afterward and is cumulative in its benevolent results.

Obstructions at the posterior end of the turbinates cause the most trouble. They are the type that physicians are most apt to leave unrelieved. Their presence so near the mouth of the Eustachian tube causes congestion, which leads either to a cyanosis of a purplish color or a hypertrophy of a grayish color. The sphenopalatine ganglion and its branches are located in this region, pressure on which leads to many reflexes. It is therefore of vital importance that operations in this deep region be performed under strong illumination. My experience has been that it is best to operate in a dark room.

The chief obstructions due to the septum are either spurs or deflections of either the bowed or angular form. When the deflections are double, the lower deflection is toward the inferior meatus and the upper deflection is bent toward the middle meatus of the other side.

In correcting these deformities it is generally possible to straighten the nose at the same time, if it is crooked. The Window resection operation has given good results in many of these conditions and has a promising future for it; but every case must be a law unto itself. There is a very large percentage of spurs to be removed if the many symptoms to be noted in such cases are to be relieved. Headache, neuralgia, aprosexia, photophobia, asthenopia and vertigo may be found with these deep spurs.

It is absolutely certain that a large proportion of the otic, naso-pharyngeal, pharyngeal and laryngeal inflammations are due to nasal obstruction in one form or another if tonsillar infections can be excluded. Therefore, the hawkers, the hemmers, the spitters, the sniffers, the drippers, the wheezers, the sneezers and the snorers ought all to be carefully examined for nasal obstruction.

Chairman Clarke: The discussion will be opened by Dr. L. C. Cline, of Indianapolis.

Dr. Cline: This is pretty late to begin on this subject, but I would like to say that the doctor has given us a nice, short paper with lots of meat in regard to the case. We find lots to deal with, and there is a great difference of opinion as to what is the best thing to do in these cases. We have our ideas and methods of treating them. Of course if we have obstruction in the nose we should try to get free passage. Now if the turbinate bones are deficient on one side you will always find that on the opposite side there will be an enlarged tissue or bony growth. The doctor has said that the posterior end of the inferior turbinate bones are the places which are most commonly involved. I find that true. I was noticing a case the other day on which I operated ten or twelve years ago, and the man has always had good free breathing. I can not find many of these cases that give much trouble. In regard to removing the turbinate bones I think it is very material that we should make a clear cut case of it rather than a rough job, but we should take out just enough for the breathing space; do not scoop out everything you can see because one part needs it. When you can breathe that is all we want. We should take out just enough and then let it alone.

Now others are here that may want to speak and I will not take more of your time. Dr. Stevenson's paper was very good.

Dr. Stolz: This was a very excellent paper, and full of meat, as the doctor says. It seems to me that the treatment of these cases of stenosis as far as the surgical part is concerned has been overdone. I must confess that I have been guilty of the same thing. When a new operation came out I would dive into it, and sometimes I got splendid results; in fact I did in a large majority of the cases, but we have overdone this surgical work I believe and we should be more conservative in the nose. I do a good deal of work with pure tincture of iodine. I destroy the cell, so to speak, and sort of cocainize these turbinates, and then I massage these parts, and in this way I can get the inflammation reduced and avoid a

great many operations of the turbinates. I believe that some should be operated on.

I do not agree with Dr. Cline in all that he said.

Dr. Kyle: I want to congratulate Dr. Stevenson on his paper and say that I agree with him as heartily on this one as I disagreed with him in his talk not long ago. I think it is not possible to get perfectly distinct symptoms for any operation, and we do not always demand it. We often have one side developed much more than the other side. We want to make a correct breathing space and when that is done that is all we can do. As Dr. Cline has remarked, this is the essential feature, and not so much for form.

(Dr. Masters in the chair.)

Chairman Masters: If no one else wishes to discuss the paper Dr. Stevenson may close it.

Dr. Stevenson: I wish to thank the members for their kind remarks. I think the subject of submucous operations will go on; I think it is overdone in Chicago at the present time, and in some cases it may be possible to get good results from this method, but I never heard of it before.

I hope that next year the members from Indianapolis will see that we have a longer time, and then we can have a better meeting, for we will not feel that we are speaking when some one else should be; and in this way we will advance the work on the eye, ear and nose.

Dr. McConnel's paper was referred to the general section, as there was not time for him to give it in this section. It will therefore appear in that report.

Dr. Cline: If we expect to advance our cause in Indiana we will have to give more time to these subjects, and I move you that we seek to enlarge our section by beginning at the beginning of the session next year, and in this way having more time, and having our subjects when the doctors are not all tired and ready to go home.

Dr. Stolz: I second the motion.

(Carried.)

Dr. Stevenson: I move that Dr. Cline be appointed as chairman of a committee which he is to select himself to see that this thing is made a success.

(The motion carried.)

The meeting then stood adjourned.

PHYSICAL THERAPEUTICS.

BY J. E. M'CONNELL, M. D., CARLISLE, IND.

It is with great hesitancy that I come before this Association to present a paper connected with the vast subject of physical therapeutics. I have the more hesitated as I have made no new discovery, have invented no new machines, instituted no original method of application, nor made any miraculous cures. I make no claim as a specialist in this department of therapeutics, using it as an adjunct to other remedial measures, other than the agent "par excellence" in the diseases which I now find yield most readily to its application. I have not found them a "cure all," some few cases seemingly were made worse; but with care I have seen no ill effects that were lasting. Few, if any specifics exist in medicine. The history of therapeutics is a history of blasted hopes. Where one new therapeutical agent has accomplished even a fraction of what was in the beginning claimed for it, a hundred perhaps have miserably failed.

Up to the present time, or until recently, these physical measures have been used most successfully in chronic conditions. Chronic diseases, so called, are in almost every instance associated with the well known condition "local stasis." Acute and subacute inflammatory affections which from neglect have been followed by infiltration of the tissues, with inflammatory exudate, have a tendency to persist and become chronic. The view in the past that inflammatory conditions of the chronic type, such as follows trauma, or those associated with other simple inflammatory processes should be treated by rest is erroneous. No greater error can be made than the institution of absolute rest in the treatment of joints or traumatic affections. Barring fracture, rest favors the continuance of stasis and is favorable to the associated degeneration. The management of such conditions in the past has been

the most difficult problem in medicine. To rheumatism and other so-called dyscrasia, have been ascribed numerous affections which are oftentimes in no sense of rheumatic origin.

Neuritis, synovitis, sprains, strumatoid arthritis and a host of other conditions, have been treated with the salicylates, iodides, quinine and other drugs which are destined to impair digestion and render the individual otherwise uncomfortable without even affecting the inflammatory processes. Until we administer such agents for the relief of inflammatory processes which will prevent or induce reabsorption of the inflammatory infiltration and restore normal circulation and nutrition to the parts, the chronic diseases will continue to furnish food for the quack, patent medicine vendors and charlatans who prey upon credulous humanity.

Stasis must be recognized as an existing condition in all inflammatory processes, whether of the great glands of the body or in the processes in the joint structure, a local irritation sufficient for action of any sort is the occasion for the establishment of a local induration, which is nature's provision, primarily, for walling off a pus cavity. But where nature makes an unfortunate mistake is in building up a wall of induration where no infection is present and for which she has provided but feebly to remove. It seems that our failure to recognize this truth and the institution of means for breaking down indurated areas, which is the fundamental cause for delay in the cure of most inflammatory conditions, is the occasion of our inability to cope with these conditions.

When this fact is recognized—as it is certain to be—and it is appreciated by the profession that there are means at our disposal for overcoming this cause of chronic inflammatory process, a new era will be established in the treatment of chronic diseases. Cripples will be less numerous, chronic rheumatism forgotten and the business of the quack obliterated.

My armamentarium consists of a twenty-four-plate static machine (Torpleu-Holtz), a resonator (Birtman's), a twenty-four-cell wall cabinet which gives both the galvanic and faradic currents, a mechanical vibrator, body and local hot-air apparatus, dumbell exercises, etc. One of the great if not the greatest of these measures is electricity.

It has been the common expression of the scientific mind for centuries that we know the powers and properties of electricity, can harness it and make use of it in commercial and scientific pursuits, but no one can define it. The investigations of Thomson, Crooks, Morton, Snow, and many others, seem to have solved the problem, and electricity instead of being a mode of motion as we have looked upon light, heat and other physical forces, seems to be the embodiment of all forces and motion—a substantial thing of which light and heat are manifestations. It seems to be the base or foundation element of all matter. Should future investigation demonstrate the truth of what seems now almost an established fact, the elements which have stood against subdivision into their component parts may as it seems be divided into atoms of electricity. Hydrogen, the chemical unit, has been divided into more than eight hundred of these atoms. And it seems to remain only for the future to resolve all elements into the same constituents. How great the conception! How omnipotent the forces of electricity, and how near the solution of the great problem of the universe, if this is ultimately effected. I have treated a few cases during the past few years that I wish to present to you.

Neuritis in its various locations, owing to its frequency, severity and its chronic tendencies, is at once a subject of interest to the general practitioner and the neurologist.

To one using these physical remedies it is especially interesting, as many cases fail absolutely to yield to internal medicines, while electricity or some of the physical measures offer the best and frequently the only means of relief. It matters but little how expert one may become in his knowledge of these physical remedies and their actions upon the human tissues, if he is not equally expert in his diagnosis he may utterly fail, and increase instead of diminish the malady.

Therefore no current of electricity, nor any form of so powerful remedies as these forces offer, should be applied to a painful nerve until he is satisfied as to the true nature of the disease and if possible its underlying cause or causes. It is best to do nothing until he has by careful study of the case determined as to the best course to pursue; for in these painful conditions of the nerves, the etio-

logical factors are numerous and varied. It is not necessary for me to name the causes, you fully understand them. So too are you familiar with the symptoms after making the diagnosis; and with due consideration of the stage of the disease, the next question that confronts us is the patient's early kind of treatment and its mode of application.

As each case is a study within itself, I will give you a history of a few cases I have treated during the past three years.

Mr. E. O., age forty-five years, farmer. Came to office suffering with pain in right hip, thigh and leg (suffering intensely), leg flexed, back bent; walking on crutches; could not sleep, greatly emaciated; the affected thigh was five inches smaller than left. In December, 1903, while using a slip scraper the handle hit his thigh. Not much note was taken of the hurt at first but in a few mornings had considerable stiffness, soreness and some pain; soon forgot about hurt, but all symptoms continued to increase in severity. He went the rounds of his home physicians, consulted one or two in other places, said some promised to cure him in three days, etc. All gave him rheumatic medicine. May 30, 1904, some five months after onset, came to my office with above symptoms. I gave him the Morton wave current followed with sparks each day until July 1st, then every other day until July 27th; again August 1st, 2d and 24th. Since that date he has had no trouble or treatment. After the first week he suffered but little pain, limb grew stronger and within two weeks walked without crutches, and as limb grew stronger pain grew less.

My diagnosis was sciatic neuritis caused from the little hurt. He had no medicine. Have treated eighteen cases within the past three years and, when causes could be removed, results were satisfactory.

Mr. C. L. H., age fifty-five years, merchant. Came to office April 30, 1904, suffering with pain in upper arm and shoulder (deep in bone) restricted motion; could not rest day or night; losing flesh; pain extended to hand and fingers. During the winter of 1904, probably January or February, while ascending a ladder his feet slipped and he fell and caught his weight on this

arm. At first the pain and stiffness were slight but gradually increased. Had his first treatments at 5:00 p. m., April 30th—Morton wave currents and sparks. The next morning said he had had no pain until about 4:00 a. m. He was treated once each day for one week then four times a week until June 10th, at which time he was well and had been free from pain for some time. His treatments were changed often—he had hot air, electricity and vibrations, and with any and all had exercise. Have had ten similar cases with good results. Diagnosis, brachial neuritis. He also had had rheumatic remedies, without any results.

Mrs. B. O., age forty-seven, housewife. Saw her first time at her home March 15, 1906, with this history: Had influenza in November, 1905, and after the general aching stopped, right knee continued to pain severely; some little swelling, motion became restricted, no fever that she noticed. On questioning her says as motion of joint grew less, pain increased. When I saw her, temperature normal, could digest nothing; rapid pulse, 120 per minute; in bed, emaciated greatly. Her physician had informed her she had rheumatism, with heart disease. She was despondent and as she said had given up all hopes. She came to office March 18th and stayed one week. Gave her hot air, electricity and vibrations and all the time, or each day, passive motion of this knee joint. At the end of the week could walk without her crutches, heart eighty-six, and stomach not bothering much. No medicine of any kind. She came to office three times a week for four weeks, and as knee could be worked pain grew less. Now she walks without a crutch, and is well.

A series of felons and palmar abscesses. Sufficient to say of these cases is the mode of treatment—early and free incision, or as early as they present themselves to you for treatment. Follow with hot air to parts for one-half to an hour, stimulate by vibration corresponding spinal center, also the accompanying group of superficial lymphatics. Usually one treatment is sufficient and the felon or palmer abscess is eased before treatment is complete, and as a rule does not return, and parts rapidly heal. Never have had to use more than three treatments for any one abscess.

A boy five years old was brought to office with following history and symptoms: Both parents healthy, no specific history. Child at age of seven months had cerebro-spinal meningitis, with all of its dreaded symptoms, after three or four weeks fever subsided, spasms stopped and he seemed to be well except quite nervous and only certain groups of muscles at a time seemed to twitch, arms, legs, head or throat. He grew and developed well, but as he grew older seemed to be more violent in actions of muscles, etc., and still had the intelligence of a seven months' old boy. At the time of bringing him to office could not talk or in any way control his motions any better than a seven months' old baby. Everything went into his mouth, and if possible he swallowed it regardless of taste, looks or smell; had to be confined, fed and cared for same as baby seven months old; began treatment without much hopes; have treated sixteen months, twice each week, giving him wave current, head breeze, sparks, vibrator and a system of regular exercise. Present condition something like this: Eats and acts as a child two or two and a half years old; quite emotional, bashful, plays with children and enjoys them; no longer confined, tells mother when he wants to urinate, etc., says a few words, can be sent to do little chores, knows his bed, his shoes, his hat, and his place at the table, selects his victuals and only eats what he likes. We started this case and expect to continue treatment until the boy is eight years old, and if present rate of improvement continues, will hope to have him as intelligent as a child five or six years old, and in a few years more hope to start him in school.

GONORRHEAL LESIONS OTHER THAN THOSE OF THE GENITAL TRACT.

BY ALFRED KANE, M. D., FORT WAYNE, IND.

We have in the extragenital lesions of gonorrhea some structures involved that lend to the infection a serious aspect, and although these lesions are comparatively infrequent it is of scientific and prognostic importance to recognize them when they occur. The very fact moreover of the gonococcic infection being absorbed and disseminated either in the shape of ptomains or the active micro-organism itself, adds to the trepidation with which we view these untoward phases of what was originally a serious infection. I do not mean to infer that all of these cases have an unfavorable prognosis, but rather to insist on the fact that gonorrhea itself in all its aspects is a serious disease and that the conditions we are about to consider are some of those phases that make it so. Some idea of the incidence of extragenital complications may be gained from the series of cases gathered by Von Hofman and published in May, 1893. At that time he was able to collect from the literature four hundred (400) cases of gonorrheal infection where the lesions were not confined to the genital tract or to the site of original infection. As the result of his studies he concludes that the dissemination occurs in the great majority of cases through the blood stream, localizing in muscles, tendon sheaths, joints, or in fact any organ or tissue of the body. Again we may have a septicemia develop and go on to a fatal end where no localized lesion could be demonstrated during life. Thayer cites the case of a man twenty-two years of age who developed an acute urethritis followed by an intermittent temperature of great severity, in which no localization could be demonstrated, that was followed by death. This, however, may not have been an exception to the rule, as no autopsy was held. Padula in 1892 described a mild,

continued or intermittent fever developing during the course of either complicated or uncomplicated gonorrhea that ran a course of several weeks and terminated in recovery. Thayer observed a case of septicemia recently that ran a course of seven weeks and terminated in recovery; the presence of the gonococcic diplococcus in the blood being demonstrated.

The complicating lesions may show themselves at any time during the course of an attack of chronic urethritis. Thus Charteris in 1876 reported the death of a boy from pyemia on the sixth day following the onset of an acute urethritis, and Osler reports another death from general sepsis on the fourteenth day. As a rule, however, the complicating lesions more frequently develop somewhat later, absorption from the intact mucosa being difficult. After the use of strong injections and unskillful instrumentation it does not take a very elastic imagination to conjure up as much abraded mucosa from which absorbtion may readily take place. Again, the enormous preponderance of the complicating lesions in men stands out prominently, Northrup, out of 252 cases of gonorrheal arthritis, noting 230 in males, all of the cases in women being complicated by an involvement of the urethra. The relative toughness of the vagina and endometrium has been advanced in explanation of the relative immunity. In the collection of cases above referred to, Von Hofman tabulated sixty cases of endocarditis, the diagnosis depending on the history of a specific infection and the demonstration of endocardial lesions post mortem.

In 1895 Thayer and Blumer of Johns Hopkins first cultivated the gonococcus from the blood of a patient with a specific urethritis who was suffering at the time with a heart lesion; post mortem the specific diplococcus was obtained from the heart valves. J. E. Tyree has, since 1903, collected fifteen additional cases, and has himself reported one; making in all seventy-six cases collectible to date.

It is impossible, except for purposes of study, to separate endocarditis, pericarditis, arthritis and meningitis from septicemia, for I would consider them simply as local manifestations of the latter. In many of the cases we find the endocardial involvement

preceded by an arthritis of one or more joints. It has been demonstrated that an endocarditis secondary to a specific urethritis may be of a mild type, but consideration of the cases studied recently points out the fact that many present a pathological picture differing in no essential points from that of malignant endocarditis from other causes, the predilection for the aortic and mitral segments seems to be the same and the microscopical findings point to practically an analogous process, thrombus deposition on the leaflets with secondary vegetative formation and ulceration taking place. A glance at the reports of two fatal cases of gonorrheal septicemia with endocardial involvement may be of service in helping to fix the picture presented by this complication. These cases were reported by Thayer in the American Journal of Medical Sciences in November, 1905. The first case occurred in a man twenty-one years of age, who was suffering at the time of admission with a specific urethritis. The patient had been exposed three weeks prior to his admission during a rain storm and was compelled to work in wet clothes all day. This was followed by short, hacking cough and at the end of two weeks had shortness of breath on exertion, and at the time of admission noticed edema of the feet and legs for first time. On examination a diastolic murmur was present at apex; also a diastolic murmur heard in right second interspace, but loudest in third left interspace, diastolic murmur heard over heart generally. The second sound at apex is indistinct, the pulmonic second sound much accentuated. The pulse definitely collapsing. The accentuation of the pulmonic second sound continued throughout the illness and was associated with a loud rumbling presystolic murmur ending in an abrupt first sound. This case ran an intermittent temperature for eleven days (97-103 F.) at which time death took place. Autopsy: Heart enlarged, the left ventricle particularly so, arteries covered by chains of epicardial nodules. The aortic valves have delicate edges, the right and middle segments are normal. The base of the left coronary leaflet is covered by vegetations and an extensive erosion has taken place so that the whole floor of the sinus of Valsalva is destroyed and the scissors can be passed from

the left ventricle into the aorta through the open floor of the left coronary sinus of Valsalva, the valve remaining as a bridge across the aorta, the sinus is covered everywhere by rough vegetations. The sinus has been extended by ulcerations into the wall of the left ventricle especially anteriorly and to the left where a cavity has been hollowed out in the upper portion of the wall of the left ventricle just behind the anterior mitral segment. The chief mass of vegetation which hangs in the blood stream measures 18 mm. in length, is soft and friable and has a folded irregular surface, it is covered by a post mortem clot that may be pulled off like a glove finger. The apices of all the mitral papillary muscles are capped by areas of necrosis. Bacteriological cultures from the heart valves demonstrate the presence of the gonococcus of Neisser.

The second case occurred in a male patient, aged forty-one years, who had contracted a specific urethritis four weeks before admission. Two weeks after the onset, the right wrist became involved, the patient exhibiting the symptoms of septicemia and developing an aortic endocarditis, death supervening on the 4th of February, about two and one-half months after the onset of the acute urethritis. In this case the aortic valves are covered on the ventricular side with a vegetative growth which involves the right and left coronary segments.

The vegetations are large, rounded about 1.5 c.m. in diameter and spring from the central portion of each valve, binding the two together so that the left coronary segment is distorted and pulled toward the right. The valves are eroded when seen from the sinus of Valsalva. The myocardium of the right ventricle is flabby and measures 3 mm. in thickness. The myocardium of the left is 15 mm. in thickness, opaque and dull gray in color.

It will be noted that the cases ran a course uncomplicated by coma, delirium, bloody urine, etc., symptoms caused by embolic processes so frequently seen in malignant endocarditis. In the case reported by Tyree the patient, a woman, had a suppurative ophthalmia three months before the onset of symptoms. At the time she entered the hospital she had been suffering for three weeks with headaches, occasional chills and some fever. After

exposure during menstruation the function ceased, and a few days later arthritis of both wrists, the right knee and ankle supervened, and on admission to hospital, an aortic murmur was demonstrable. Death occurred six weeks after the onset of general symptoms. The heart and blood exhibited the gonococcic diplococcus. The autopsy revealed an involvement of the aortic segments, the leaflets being covered by large yellow fibrinous excrescences which nearly filled the orifice. On the right posterior cusp is an area about 2 mm. in diameter, which had ulcerated through the valve and is partially occluded by a thrombotic mass. The symptoms of malignant endocarditis are very far from being pathognomonic and the only things that may point toward a solution of the problem may be an increase of the fever accompanied by an acceleration of the pulse with or without some irregularity. The cardiac murmurs are often uncertain and as evidenced post mortem our localizations are not invariably correct.

The above detailed cases occurred as part of a gonorrheal septicemia and therefore the case observed by Thayer during the past summer of a mild septicemia running a course of seven weeks, and terminating in recovery is of unusual interest. In this case occurring during the course of an acute gonorrhea the specific diplococcus was obtained from the blood. The course was that of a mild septicemia unembarrassed by any discernible complications.

Gonorrheal arthritis should perhaps have had precedence in this paper, because it is in some respects more important than the endocardial involvement, and while not offering so unfavorable a prognosis as to life it is, as Osler says, one of the most disfiguring, disabling and, therefore, serious complications of gonorrhea.

The arthritis develops in about two per cent. of all cases of gonorrhea, although the percentage has been given as high as ten by Taylor. The joint inflammation is the result of the absorbtion of toxalbumens from the primary site of infection or from an active infection of the joint by the gonococcus; suppuration supervening, we may expect a mixed infection.

The clinical manifestations vary from fleeting arthralgic symp-

toms to a severe arthritis with pus formation. As a rule the arthritic involvement occurs not earlier than the third or fourth week and is frequently dependent on involvement of the posterior urethra. The early joint involvement consists in a synovitis which is serous or serofibrinous, a marked tendency being exhibited toward extension, with consequent production of periarthritis and tenosynovitis, causing a fusiform appearance of the joint. There is a marked tendency to chronicity in many instances and these are the cases which show fibrous adhesions and occasionally fibrous ankylosis.

Repeated attacks are usually dependent on recurring urethral infections, many cases being on record where the patient has had an arthritis with every attack of urethritis. About forty per cent. of all cases are confined to a single articulation, though many joints may be successively involved. The only specific point in the differential diagnosis is the demonstration of the specific micro-organism.

The symptomatology varies considerably. As a rule the fever is slight and the symptoms, referable to general spesis, may not be marked; pain may be severe, or, again, so slight that it attracts little attention, stiffness being complained of principally.

The enlargement of the joints may be considerable, and is frequently augmented by involvement of the bursa and tendon sheaths. Early immobilization of the joint is of benefit and dry, hot air or counterirritation may be tried. Early passive motion, however, should be resorted to, as a stiff joint may occur even with the best of care and passive motion is the best means of limiting this undesirable result.

Baer, in the February number of Surgery Gynecology and Obstetrics, reports six cases of exotosis of the os calcis due to gonorrhea, in which the pain was so severe as to prevent the patients from following their ordinary avocations. The exostoses vary in size from that of a pea to that of a marble. Baer concludes that the primary pathology occurred in the flexor brevis digitorum muscle from there growing down upon the os calcis and that the periosteum was secondarily involved. In all of the cases, disease

was bilateral and situated at the tubercle of the os calcis. The lesion pathologically was that of an inflammatory process with round-celled infiltration, and in some beginning calcification. All of the lesions were demonstrated by radiographs and were relieved by operation. The gonococcic diplococcus was obtained definitely from one case and in another a suspicious micro-organism was present; all of the cases occurred from three to nine months after the acute urethritis.

Pain, the peculiar gait, and thickening of os calcis are offered as diagnostic points. Extoses on the os calcis have been reported by Painer L. Jacquet and Nobl, but the above quoted cases are the first, I believe, where the direct responsibility of the gonococcus has been proven.

I have purposely omitted the consideration of pericarditis, meningitis and the lesions more intimately connected with the urinary tract because of time limitation.

MEDICINE IN THE NORTHWESTERN TERRITORY; A CONTRIBUTION TO THE EARLY MEDICAL HISTORY OF INDIANA.

BY HUBBARD MADISON SMITH, M. D., OF VINCENNES, IND.

[The following paper was read by Dr. Smith before the Second Councilor District of Indiana, at the Vincennes meeting, April 23, 1906. It was sent by the author to the editor of the Indiana Medical Journal for publication. Appreciating its great importance, the editor at once referred it for publication in the Transactions, but as it was received too late for the program it was referred unanimously in general session.—Editor.]

At the first annual meeting of the Second District Medical Society of Indiana, it occurred to me that it would not be inappropriate for its members to take a retrospect of the doings of our coadjutors, in their lines of action, about a century ago.

The first medical society organized in the Northwestern Territory, wrested from the British Government by Col. George Rogers Clark on February 25, 1779, occurred in Vincennes, Ind. The exact date is not positively known, but I know for a fact that its origin was prior to the year 1818. Goodspeed, in a history of Knox County, published twenty years ago, states that, "in 1817, the physicians of this place met and formed a medical society." Presumably, a society was then, or at an earlier period, formed, for I have evidence, obtained from a newspaper published in this town in 1818, in a call, printed therein, for a meeting of a medical society in that year, and my recollection is that Drs. Dinwiddie and Truesdale were members. No known records of this society exist.

Another society was organized here in 1827, and, on June the 5th, elected the following officers, viz.: Drs. E. McNamee, President; J. Kuykendall, Treasurer, and H. Decker, Secretary. Present: Drs. J. D. Wolverton, J. K. O'Haver, and Philip Barton. This society bore the title, "The Medical Society of the First Medical District of Indiana."

It will thus be seen that the name of this society was almost identical with our new district organization. The extent of territory the society embraced I know not, but it doubtless was as great as that of this organization. The membership embraced the names of the following doctors, to wit: Philip Barton, G. G. Barton, Joseph Brown, G. G. Barry, B. J. Batty, Hiram Decker, H. Davidson, W. Dinwiddie, John W. Davis, Jos. P. DeBruler, A. Elliott, Wm. Fairhurst, W. W. Hitt, Hezekiah Holland, R. B. Jessup, J. Kuykendall, Alexander Leslie, E. McNamee, Joseph Maddox, F. M. McJenkin, N. Mears, John R. Mantle, Thos. Nesbit, J. K. O'Haver, T. F. Offutt, Joseph Porter, J. W. Posey, J. W. Pennington, Josephh Somers, Daniel Stahl, J. S. Sawyer, O. G. Stuart, G. B. Shumard, Hubbard Madison Smith, Thomas B. Thompson, J. D. Wolverton, W. C. Warner and Daniel Dinwiddie.

By a reference to the records of this society some interesting facts are gleaned, not the last important of which is that of the existence at that time—1827—of a State medical organization. If I mistake not the State Medical Society, organized in 1849, is supposed to have been the first State organization, which is an error. To controvert that opinion, I herewith quote from the transactions of the Vincennes Medical District Society the following:

"This Society proceeded to elect delegates of the State Medical Society, which resulted in the election of Doctors J. D. Wolverton, for three years; Hiram Decker, for two years, and Philip Barton, for one year.

"Resolved, That this Society do allow the sum of ten dollars to the delegate or delegates annually to the State Medical Society."

And, in 1830, a like sum was appropriated for expenses of delegates. These records establish the fact that a State medical society existed as early as June 5, 1827, and perhaps earlier, and the one organized in 1849 was the second State society.

In the by-laws of this first district medical society, the twentieth article is well worthy of adoption by our own new organization, and is as follows:

"Medical men should remember the Sabbath day, to keep it holy, and visits should, as far as consistent with professional engagements, be made either before or after public worship, or during its intervals."

Goodspeed's history of this society states that there was no standard pharmocopeia in the United States at that time, and that it sent a memorial to Congress to appoint a committee of competent physicians to compile one. This district medical society continued to hold meetings that were recorded up to March 23, 1835, and, occasionally meetings occurred as late as 1854, of which the writer is cognizant, as he became a member of it in May, 1849, and knows of the admission of Dr. Geo. B. Shumard in June following, and Dr. Robert B. Jessup in February, 1854—as the treasurer's book shows; yet no records are known to exist recording the doings at the meetings subsequent to March, 1835. It is worthy to note in giving the medical history, especially concerning the physicians of this medical district and town of Vincennes, that an attempt was made to establish a medical school here in 1839. The charter of the Vincennes University, granted by the Territorial Legislative General Assembly, gave it authority to establish branches, besides literature, those of theology, law and medicine; and although I find no record in the transactions of this society, I gleaned this fact from the recorded transactions of the University Board of Trustees, in a petition recorded there, from the physicians asking for the use of a part of its building, in which to teach medicine and its branches. The right to the ownership of the building being in controversy between the University and the State of Indiana, the petition was not granted, and the project fell through, and no further record of it exists.

In looking over records of this society, I find little in them worthy of note. With the exception of one paper presented by Doctor W. W. Hitt, which was ordered to be forwarded to the "Medical and Physical Journal," edited by Dr. Drake, at Cincinnati, O., and to the Transylvania Medical Journal, Lexington, Ky., for publication, there is little more than routine meetings recorded, embracing the elections of officers, granting diplomas, at

$5.00, and a good deal about contributions, by-laws and medical ethics. Why the transactions were not recorded after March, 1835, is a matter left to conjecture. As a matter of fact I know personally that members were received into the society as late as February, 1854, the members being the writer, in May, 1849; Dr. G. B. Shumard, June, 1849, and Robert B. Jessup, February, 1854.

This district society having ceased to have a vital existence, a call was issued for a meeting, at the city hall, of the physicians of Knox County, June 24, 1875, when the "Knox County Medical Society" was organized, the following named physicians being present: F. W. Beard, A. J. Thomas, James F. Origan, Hubbard M. Smith, J. W. Pugh, W. W. Hitt, W. H. Wise, W. B. Sprinkle, O'Connel Fairhurst, J. N. Merritt, A. J. Haughton, Alfred Reel, John C. Beever, John R. Mantel, W. B. Harris and M. Witherspoon.

This society became affiliated with the State Medical Society, and maintained its organization until it was adopted by the new State organization.

On October 26, 1875, a new medical society was organized in this city, composed of physicians of the States of Illinois, Kentucky and Indiana, under title of The Tri-State Medical Society. The organization elected the following officers: Drs. Joseph Thompson, Ky., President; W. A. Smith, Ill., J. K. Letcher, Ky., and J. B. Armstrong, Ind., Vice-Presidents; Geo. W. Burton, Ind., Corresponding Secretary; F. W. Beard, Ind., Secretary, and Alfred Patton, Ind., Treasurer. Other attending members were: Drs. John R. Mantel, Hubbard Madison Smith, Willis W. Hitt, John C. Beever, William H. Beeson, Robert B. Jessup, Vincennes; J. S. Dukate, Wheatland; John T. Freeland, Freelandsville, and Martin Witherspoon, Bruceville. These three States comprised originally the scope of the society, but it permitted physicians of other States to join it, and in a few years its numbers had so increased, and become so cosmopolitan in character that it lost its identity, and assumed that of Mississippi Valley Medical Association. After meeting a few times in the States it originally

comprised it met in St. Louis, and thereafter in many distant States, and the new organization soon rivaled in membership and power, almost, the American Medical Association.

About eight years ago another district medical society was organized, which was composed of physicians of the counties of Knox, Daviess, Pike and Gibson, but it has been superseded by this, the Second Congressional District Medical Society.

The foregoing may be considered prosy matter, but as it embraces concise early information as to the time of the formation of the first medical society of the Northwest, and the names of some of its members, and the medical organizations following, to the present time, especially as it relates to societies in county and district; yet I give it as a matter of medical history for the present, as well as for those doctors who will take our places in the coming years that it may be a matter of record ere time relegates the facts embraced herein to the vale of oblivion.

MINUTES

OF THE

Meeting of the Indiana State Medical Association

AT

WINONA LAKE,

May 23, 24 and 25, 1906.

FIRST GENERAL SESSION.

The meeting was called to order by the President, Dr. G. H. Grant, of Richmond. An invocation was pronounced by Rev. J. Wilbur Chapman, of New York, and Rev. S. C. Dickey, of Winona Lake, delivered a short address of welcome, in which he took occasion to explain the objects of the Winona movement, and told what had been accomplished, and what their hopes and expectations were. Response was made by Dr. D. W. Stevenson, of Richmond. Then the scientific program was taken up.

Afternoon Session.

MEETING OF THE HOUSE OF DELEGATES.

The meeting was called to order by President Geo. H. Grant, and by consent the roll call was dispensed with. The reports of the various officers and standing committees were then called and adopted.

The reports appear at another place in this book.

Dr. Theo. Potter, of Indianapolis, after reading the report of the Committee on Tuberculosis, called attention to a letter of inquiry received. The tuberculosis commission is supposed to sit with the county medical societies, so that the Governor and the commission may know whether there is a real public sentiment behind the demand to establish a tuberculosis sanitarium. He proposed to do this by asking each county medical society two or three questions, and the replies to these will go to the Governor and the commission.

Dr. J. Hill, of South Bend, suggested that the reports of the county societies go to the Governor in the shape of petitions from the county societies. This was assented to.

To the report of the Committee on Inebriety, Dr. Potter raised an objection and questioned the expediency of declaring to the Legislature that there is an emergency existing now that requires the establishment of an institution.

Dr. Green, of Muncie, who read the report, stated that in drawing the report he did not fix a time, for the reason that the tuberculosis bill is now being considered, and if deemed best the bill could follow the one for a sanitarium for tuberculosis.

On this explanation Dr. Potter withdrew his objection and the report was approved.

Dr. Green thought the question of expediency as to the two bills was a question that could be discussed.

The report of the delegate, Dr. G. W. McCaskey, of Ft. Wayne, to the International Congress at Lisbon, Portugal, was received.

The question of the place of next meeting was then taken up and Dr. Geo. Kahlo extended an invitation to meet at French Lick. Dr. Wright, of Huntington, suggested Indianapolis. Dr. W. N. Wishard, of Indianapolis, extended an invitation to the Association to meet in Indianapolis. A ballot was taken and the count resulted in the selection of Indianapolis as the place of next meeting.

A communication from Dr. Geo. F. Keiper, of Lafayette, stated that it was the sense of the ninth councilor district that a State medical journal should be established in place of the annual volume of transactions.

On motion of Dr. W. N. Wishard it was referred to the Committee on Publication.

No further action was taken.

The Committee on Publication made no report.

Adjourned.

The evening session was held in the Auditorium. The assembly listened to the address of the President, Dr. G. H. Grant, of Richmond, and an address by F. S. Watson, of Boston, on "The Commercial Spirit in Medicine."

Dr. M. F. Porter, of Ft. Wayne, moved that the recommendations in the address be approved by the Association, which was done.

Morning Session.

MEETING OF HOUSE OF DELEGATES.

Friday, May 25, 1906.

The House of Delegates met at 8:30 Thursday morning and proceeded to elect officers for the ensuing year.

On motion of Dr. C. A. Daugherty, of South Bend, Dr. George J. Cook, of Indianapolis, was elected President.

The President announced that the Vice-Presidents must be selected from the Presidents of the district societies.

For Vice-Presidents, Dr. J. B. Garber, of Dunkirk, eighth district, was elected First Vice-President; Dr. Charles C. Terry, of South Bend, thirteenth district, Second Vice-President, and Dr. Charles J. Chittick, of Frankfort, ninth district, was elected Third Vice-President.

Dr. F. C. Heath, of Indianapolis, was elected Secretary, and Dr. A. E. Bulson, Jr., of Ft. Wayne, Treasurer.

Two delegates to the meeting of the American Medical Association were elected. Dr. Bulson nominated Dr. J. B. Berteling, of South Bend, and Dr. Edwin Walker nominated Dr. A. M. Hayden, of Evansville. They were voted upon together and elected.

Under the head of miscellaneous business Dr. Bulson spoke of the subject of an official button for the Association, and moved the adoption of the button worn at this meeting, designed by Dr. Geo. Kahlo.

Dr. Spohn, of Elkhart, advocated the incorporation of the national and State buttons into one emblem.

Dr. Barcus, of Crawfordsville, also advocated this plan, and that the question be referred to a committee.

Dr. Bulson thought the idea a good one, and withdrew his motion.

Dr. Foss, of Huntington, moved that a committee of three be appointed to consider combining the two buttons into one design. It carried and the chair appointed Dr. Spohn, Dr. Kahlo and Dr. Foss.

Dr. Kemper suggested that the committee be empowered to design a button.

Dr. Bulson moved that this committee design a button for next year's meeting, which, if satisfactory to the Association, was to be adopted as the official button for the Indiana State Medical Association.

It was seconded by Dr. Kemper and carried.

Dr. Bulson called up the question of the election of councilors in districts where their terms had expired, such councilors to be chosen by the members of the House of Delegates in the respective districts, to be approved by the House of Delegates. The name of Dr. G. W. H. Kemper was submitted from the eighth district and it was ratified.

Dr. W. N. Wishard moved that the roll be called of the districts where councilors were to be elected, and if no objection was made the present councilors be continued and confirmed.

Dr. Myers, of Bloomington, second district, said there was no objection to Dr. Knapp, of Vincennes, and he was continued as councilor from the second district.

Dr. Bulson stated that the councilor from the fifth district, Dr. Boor, of Terre Haute, asked to be relieved.

In the eleventh district Dr. Miller, of Logansport, said the councilor had resigned. He nominated Dr. C. H. McCully, of Logansport.

Dr. Wilson, of Logansport, nominated Dr. W. A. Fankboner, of Marion.

By instructions of the President the councilors from this district retired to select a councilor.

No nomination was made from the fifth district.

Dr. Blinks, of Michigan City, offered the following resolution:

Whereas, The evil of lodge and society practice is growing rapidly and insidiously, and the field of legitimate practice is menaced thereby; be it

Resolved, That the Indiana State Medical Association condemns such practice and urges all members to refrain from accepting such contracts.

The resolution was approved.

Dr. Blinks also offered the following resolution:

Whereas, The examination fees for fraternal insurance are entirely inadequate for the service required, and some old line companies taking advantage of this fact are attempting to reduce their examination fee; therefore be it

Resolved, That the Indiana State Medical Association urges its members to stand firm for adequate fees for life insurance examinations.

The resolution was approved.

Dr. T. B. Noble, of Indianapolis, presented the following resolution:

Resolved, That it is the sense of this Association that the proposed pure food legislation now before Congress be prosecuted, to the end that some adequate law be passed to meet the urgent ne-

cessity of past and present conditions. Its importance can not be overstated, its economic bearing touching every family's welfare. The harmfulness and dishonesty, with the whole accompanying train of commercial delinquency, requires radical measures rather than compromise. The medical profession of Indiana heartily indorses the whole trend of the present movement, and would demand that in whatever way practicable Senators and Representatives in opposition to such legislation be called to account.

Dr. Noble moved the adoption of the resolution, and it carried.

Dr. G. W. H. Kemper, of Muncie, on behalf of Dr. M. A. Austin, of the Madison County Society, read a resolution relating to the advertising of nostrums in sectarian papers.

Dr. Garr, of Kokomo, said that while he was in sympathy with the sentiment of the resolution, it ought not to be adopted in this form by the Association, it being a church resolution.

Dr. Kemper moved as a substitute that it be referred back to Dr. Austin for revision and then be presented to the Association for indorsement at the next meeting. Carried.

The councilors from the eleventh district reported that they were unable to agree upon a member of the Council and wished to leave it to the House of Delegates to decide.

On motion of Dr. Bulson the question was left in the hands of the county societies of the eleventh district to decide and report to the House of Delegates.

On motion of Dr. Bulson a vote of thanks was extended to the local committee of arrangements, the Winona management and all those who had helped to prepare for the meeting.

Adjourned.

Afternoon Session.

Friday, May 25, 1906.

The afternoon session was called to order by the President in the parlors of the Winona Hotel.

Dr. Sharp, of Jeffersonville, asked that his paper on "Tubercular Peritonitis" be read by title.

This led Dr. Brayton, editor of the transactions, to ask the Association for a ruling as to what should be done about papers sent up to the Association but not read, or only read by title.

The matter was discussed, and Dr. Potter moved that the question of whether the papers read by title should go into the transactions should be decided by the Publication Committee, unless it is especially ordered by the Association that they be published.

The motion was seconded by Dr. Kemper and by Dr. Brayton. Dr. Sharp raised the point of order that the House of Delegates is the governing body and the meeting had no power to take any action upon the subject.

The point of order was held to be well taken.

The chair was asked for a ruling, and it was decided that all papers be published this time, and at the next meeting the question could be taken up and decided by the House of Delegates.

Dr. J. N. Hurty spoke in regard to legislation regarding a State tuberculosis hospital or health farm, and moved that the President appoint a special tuberculosis legislative committee to consist of one member from each county in the State.

The motion carried.

Dr. Grant, the retiring President, made a few appropriate remarks on relinquishing the duties of his office and then introduced Dr. Geo. J. Cook, President-elect, speaking as follows:

It is my pleasant duty to present to the Association its unanimous choice as President for the ensuing year. To introduce him to you would be to do the most needless thing possible. You all know him, through his professional worth and his genial personal-

ity; very many of you know him, fortunately for you, because of his dependable friendship; and some who are here know him and hold him in loving esteem because he has brought to them relief from pain and danger, and restoration to health and comfort and happiness.

Dr. Cook made a graceful and appropriate acceptance of the presidency and the meeting adjourned sine die.

REPORT OF TREASURER.

Mr. President and Members of the House of Delegates:

Your Treasurer respectfully submits the following report for the year ending May 22, 1906:

Albert E. Bulson, Jr., Treasurer, in account with the Indiana State Medical Association for the year ending May 22, 1906:

1905.	DEBIT.	
June 7, to cash on hand	$267 86	
June 9, to cash from Secretary, dues collected	1,954 00	
Nov. 6, to cash from Secretary, dues collected	242 00	
		$2,463 86
	CREDIT.	
By cash to Secretary, honorarium and incidental expenses	$320 75	
By cash to Chairman Committee on Inebriety	9 50	
By cash to Chairman of Committee on Publication, honorarium	100 00	
By cash to Chairman of Committee on Necrology, honorarium and incidental expenses	13 30	
By cash to J. B. Champion, stenographer, 1905 meeting	85 00	
By cash to Garber and Carpenter, stenographers, 1905 meeting	73 80	
By cash to Sentinel Printing Co	52 30	
By cash to William B. Burford, 1905 transactions	1,280 80	
By cash to S. H. East	50 58	
By cash to C. J. Lose, printing	27 00	
By cash, Adams Express Company	6 35	
By cash to George J. Cook, Chairman Committee on Arrangements	71 63	
By cash, S. D. Childs & Co., electrotypes	10 00	
By cash to Councilors, eleven accounts	151 09	
Total	$2,252 10	
Balance on hand	211 76	
		$2,463 86

Your Treasurer has on hand the unpaid bills of the councilors for expenses incurred during the year, amounting to approximately $150, which upon approval will be paid, leaving a balance of approximately $60 in the treasury, with all indebtedness of the Association paid.

Respectfully submitted,

ALBERT E. BULSON, JR.,
Treasurer.

Approved:

H. C. SHARP,
D. W. STEVENSON,
E. G. BLINKS,
Finance Committee.

SECRETARY'S REPORT.

In spite of the loss of two county societies, our total membership has increased from 2,169 to 2,271, a gain of more than 100. The two counties which have failed to report, in spite of numerous letters, are Benton and Parke.

During the past year a great deal of work has been done in the Secretary's office for the new Medical Directory, soon to be issued by the American Medical Association. Secretaries of county societies have also aided in this work, as well as local correspondents appointed for the purpose.

F. C. HEATH, Secretary.

REPORT OF COMMITTEE ON MEDICAL EDUCATION.

DR. LAFAYETTE PAGE, OF INDIANAPOLIS, CHAIRMAN.

Mr. President and Delegates of the Indiana State Medical Society:

Your Committee on Medical Education desires to submit the following report:

This committee, consisting of Drs. Edwin Walker, of Evansville; J. B. Berteling. of South Bend, and L. F. Page, of Indianapolis, was appointed in March this year at the request of the Council on Medical Education of the American Medical Association.

The chief object for the organization of the Council on Medical Education was "to advance the standard of medical education in the United States." It supplies the long needed national center wherein may be collected from all sources information regarding medical colleges, students and graduates, medical standards, laws regulating medical practice, results of state board examinations and any other items bearing on medical education. This information will be arranged in such form as to make it most serviceable and disseminated to all parties interested. Such that is of general interest will be published. The Council earnestly desires to co-operate with and further the work of any organization now in the field having as its object the advancement of medical education. The Council, after conferences with representatives of state examining boards, government medical services, medical college associations and colleges of liberal arts, decided on a certain minimum standard.

STANDARD OF REQUIREMENTS.

The standard requirements now recommended prerequisite to the practice of medicine consist of five cardinal points, as follows:

1. Preliminary requirements to be a high school education, or its equivalent, such as would admit the student to one of our recognized universities.

2. Preliminary requirements to be passed upon by a State official, such as the superintendent of public instruction, and not by any one connected with the medical college.

3. A medical training in a medical college having four years of not less than 30 weeks each year of 30 hours per week of actual work.

4. Graduation from an approved medical college required to entitle the candidate to an examination before a State examining board.

5. The passing of a satisfactory examination before a State examining board.

REASONS FOR THE FIVE POINTS.

These five fundamental points should be embodied in the law or adopted as a board regulation in every State, whether that State has any medical colleges or not, since, first, they will provide that only properly trained graduates may locate in the State; second, medical colleges may be incorporated in some States now having none, and third, it will help to establish a uniform minimum standard which would help to make a working scheme for interstate reciprocity a possibility.

Point one establishes the minimum of preliminary requirements, and point two insures its enforcement, since some colleges, if allowed to pass upon the entrance credentials, might willfully or through neglect matriculate students having little or no preliminary training.

Point three establishes the minimum time limit during which study of medicine should be pursued, which, however, would not be efficient unless (point 4) the student was graduated, thereby having the approval of his alma mater.

Point five, regarding examinations, bears the same relation to the medical training as point two does to preliminary education. The chief value of the examination is not only to protect the State from unfit candidates who may have slipped through the meshes of some medical colleges and secured diplomas, but also to keep the medical colleges up to a high standard, since the graduation of poor material, as shown up by failures at these examinations, would reflect against the colleges responsible.

Indiana requires all that the Council suggests, and even more in some respects, for example, a minimum of 36 hours' work each week is demanded instead of the 30 the Council recommends.

THE IDEAL STANDARD.

3. The ideal standard to be aimed at from our present viewpoint should consist of:

a. Preliminary education sufficient to enable the candidate to enter our recognized universities, the passing upon such qualifications by the State authorities.

b. A five-year medical course, the first year of which should be devoted to physics, chemistry and biology, and such arrangements should be made that this year could be taken either in a school of liberal arts or in the medical school. Of the four years in pure medical work, the first two should be spent in laboratories of anatomy, physiology, pathology, pharmacology, etc., and the last two in close contact with patients in dispensaries and hospitals in the study of medicine, surgery, obstetrics and the specialties.

c. A sixth year as an interne in a hospital or dispensary should then complete the medical course.

Under such a scheme the majority of men would begin the study of medicine between 18 and 19 years of age and would graduate from the

hospital interneship at from 24 to 25. A college education is recognized as a desirable preparation for a limited number of men, but it is thought that it is not and never will be desirable to make such college education a requirement to the study of medicine, as it would make the age of graduation from 27 to 28 years, which is regarded as too old a period at which the young medical man should begin his life's work. It is obvious that this very desirable scheme of requirements can not be at once demanded or recommended.

Your committee would advise that ultimately we strive for the ideal standard, inasmuch as in real practice we are certain to fall short of the ideal.

STANDARD NOW RECOMMENDED.

4. Under present conditions what requirements can the American Medical Association demand by reason of giving to them its official sanction? It would seem to the Council that the following scheme is reasonable and could be made effective:

a. A high school education or such education as will admit the student to our recognized universities. This requirement to be passed on by specially designated State authorities, such as the superintendent of public instruction or his representatives, and not by the faculty of the medical school.

b. A four-year course in a medical college each year of at least 30 weeks, with 30 hours per week of actual work (exclusive of holidays), no two courses to be taken in the same year. This course to be approved by a conference between the Council on Medical Education and the State and territorial licensing boards and college authorities.

c. The graduation from such an approved school should simply entitle the candidate to an examination before the State examining board.

d. The passing before a State licensing board of a satisfactory examination and the securing of a license to practice.

It is not believed that the time is ripe for the discussion of reciprocity and the many other interesting and important subjects included in the broad question of medical education. The first step must be the general and unanimous acceptance of the broad general principles outlined.

It is believed that with the establishment of an efficient permanent headquarters, with an active secretary, that the influence of the American Medical Association can secure the general adoption of these requirements within a very short time.

We believe that it will require about two years to secure the general adoption of these requirements by State boards and medical schools, and we therefore recommend that the effort be made to make these requirements effective by January 1, 1908. We believe that the American Medical Association can do much toward making American medicine second to that of no country in the world.

RELATIONSHIP OF MEDICAL SOCIETIES TO STATE BOARD.

This associaction should recognize the excellent work of the Indiana Board by supporting the measures it endorses and by assisting in prosecutions for the enforcement of the law. The medical act in 1897 provided for the appointment of a board which should be nonpartisan and not controlled by any college. In spirit as well as in letter the Indiana board has set an example to certain State boards whose hands are tied by political obligations and whose work is handicapped because they are controlled by college factions.

In order that the board may continue to be of high order the county societies should make recommendations to the State association and hand in the names of physicians of both parties who are eligible for places on the board. It might be advisable to have on the board professors in colleges of liberal arts who are teachers of the fundamental sciences.

PROBLEMS OF MEDICAL EDUCATION.

The actual adoption and enforcement of the standard in each State must depend upon forces within the State. The Council on Medical Education of the American Medical Association can only suggest and urge. It rests with the State Medical Association, through its Committee on Education, and the State Examining Board to bring about the adoption and enforcement of the standard in each State. Therefore the Committee on Education should study carefully the conditions regarding the practice of medicine in their State and see in what points the laws of their State are deficient or improperly enforced. These facts should be presented in a report to the State Association and a call issued that the Association energetically demand and work for amendments to the laws that shall bring the State up to, if not beyond, the minimum standard adopted by the American Medical Association.

1. There is need for a uniform standard of preliminary requirements which should require at least the beginnings of a classical education. The best educators now advise Greek and Latin, with a working knowledge of French and German, and the fundamental sciences of biology, botany, chemistry, physiology, anatomy, embryology and physics, which gives the basis for optics, laryngology, mechanical devices, respiration, etc.

2. The State examining and licensing boards differ widely in the minimum standard requirements for license, and no sooner are the curricula adapted to the requirements of one State when the standards are raised or altered in some other State. A failure to meet the changing demands and readjustments means a refusal to recognize the holder of a diploma or to permit an examination to any one coming from a State with a lower standard. It is evident that a uniform standard in all the States must be the basis for reciprocity. Joint deliberations between the State boards of medical examiners and the colleges are considering this problem, as well as the number of hours which should be devoted to each subject.

LEGISLATION.

Great credit is due to the Legislative Committee of this Association in securing our present laws. While they are yet deficient in some particulars, they are sane and are models of justice as compared with the laws of many of the other States. Indiana has taken a conspicuous place in the front ranks of medical progress in this country, due largely to her excellent laws and the high order of medical men who have composed her examining boards. The present board is especially to be congratulated upon the excellence of its work and its sincere devotion to the cause of education. They have initiated reforms which have been recognized and adopted by the boards of other States. It might be noted that the Indiana board, like the New York board, for several years has made examinations by number instead of by name, that a candidate may not be known. Like the Illinois board, it requires a certified photograph of applicant that no fraud may be perpetrated.

In 1897 there were some eight "diploma mills" doing business in Indiana and surrounding States. The passage of the Indiana act of 1897 and similar laws in neighboring States quickly put these fraudulent concerns out of existence. While there are still a few colleges whose work is below the standard, there are probably no "diploma mills."

In 1897 there were 495 students in medical colleges in Indiana, 156 graduated that year and an average of 26.5 weeks' work was required.

In 1905 there were 539 students in medical colleges in Indiana, 129 graduated that year and an average of 31.1 weeks' work was required.

RECIPROCITY.

The Indiana board is proud of the fact that it is one of the pioneers in securing reciprocity among the Middle States. At the present time Indiana has had actual reciprocity with Georgia, Illinois, Iowa, Kansas, Kentucky, Maine, Michigan, Missouri, Nebraska, Ohio, Virginia and Wisconsin.

The State where license is sought becomes the judge of all its licentiates, whether admitted by examination or by reciprocity indorsement. All physicians are admitted to licensure who can furnish official documentary evidence of having complied, in the State from which they come, with substantially the same requirements that obtained in this State at the time licenses under which they ask reciprocity were issued. In a word, the licentiates of other States are admitted on practically the same terms as our own licentiates.

Indiana reciprocates on Clauses I and II of the reciprocity agreement, and is ready to act with any State board whose requirements are equal and who will return the courtesy, and in behalf of any applicant who complies with its requirements.

Since reciprocity has been operative the Indiana board has accepted 43 and has recommended 36 to other States.

SYNOPSIS OF MEDICAL LAWS.

1885. File with clerk of county where applicant wishes to practice affidavit:

(a) That he has graduated in a reputable medical college and exhibit diploma to clerk, or

(b) Of self and two reputable freeholders or householders that he has resided and practiced medicine, surgery and obstetrics in Indiana continuously for ten years immediately preceding the taking effect of this act, or

(c) Of self and two reputable freeholders or householders that he has resided and practiced medicine, surgery and obstetrics in Indiana for three years immediately preceding date of taking effect of this act, and had prior to said date attended one full course of lectures in some reputable medical college.

1891. Above provisions amended to require applicant to file necessary affidavits with clerk of circuit court of county wherein he desires to locate to practice medicine, and providing that the license so issued shall authorize him to practice anywhere within the State.

1897. Act provides for the appointment of a State Board of Medical Registration and Examination. Practitioners under former laws may exchange their licenses, unless procured by fraud, within ninety days for certificates at $1. Graduates may file diplomas and necessary affidavits, and if acceptable certificates are issued thereon at $6; if not, applicants may be examined at $25.

Midwives may register on proof of ten years' practice at $1, exhibit diplomas or take examination at $3.

Board may employ a clerk at not more than $1,000 a year.

1899. Amendments:

(1) Change fee on diploma to $10.

(2) Extend time ninety days to reregister former licenses.

(3) May pay secretary $250 and clerk $500.

(4) Midwives pay on diploma $5 and on examination $10.

(5) Twelve hundred copies of annual report must be printed.

1901. Amendments:

(1) Examination required of all students in reputable Indiana medical colleges who matriculated therein prior to January 1, 1901, and graduate and make application to board prior to January 1, 1905.

(2) Limited certificates for practice of osteopathy.

(3) Three thousand copies of annual report must be printed.

1905. Places an osteopath on the board.

COMMENTS ON LAWS.

The two important features of the Indiana Medical Law are:

First. That it empowers the board annually to establish a uniform standard of requirements for medical colleges, and the board has wisely adopted the standard of the American Medical College Association. Unless an applicant for license is a graduate of a school maintaining the required standard he is ineligible for examination or license.

Second. The board not only has the right to require an examination under specified conditions. but it also has the right to revoke license where the applicant is proved guilty of addiction to alcohol or the drug habit or where he is an abortionist or has been guilty of gross immorality or crime.

It should be remembered that the enforcement of the medical law comes under the broad police authority invested in the State, and therefore makes the local prosecutor and grand jury responsible for the enforcement of the law. This implies the co-operation of local medical societies in furnishing information to their local prosecutor for the enforcement of the law.

The State board will gladly furnish an attorney to assist the local prosecutor when requested. Trial by jury is not always satisfactory in enforcing penalties for the violation of the medical laws, but it should be remembered that trial by jury also fails to convict criminals who are really guilty of murder. larceny, arson and other crimes.

It is important to correct the erroneous impression prevalent in some localities that the State medical board is responsible for enforcing the law. The responsibility rests with the local authorities, but the State board is so anxious to enforce the law that it will gladly co-operate if called upon. Failure to secure conviction in a given case may be a matter of regret, but it should not discourage efforts on the part of the local profession or local prosecutor.

RECOMMENDED AMENDMENTS TO THE INDIANA LAW.

(1) The present law would be greatly strengthened by the passage of an amendment authorizing courts to issue an injunction, upon proper showing, that any one who was practicing without license so to do according to law should be enjoined from practicing until a legal license be obtained. Under the law as now framed an illegal practitioner may continue to practice during and after prosecution by paying the fine assessed. The board has found it most difficult to force illegal practitioners to discontinue the practice by the ordinary method of prosecution and jury trial.

(2) An amendment to the revoking clause of the law should be added authorizing the State Medical Board to revoke license of the advertising doctor who advertises in the public press, or by pamphlet or circular, his ability to cure diseases well known to be incurable.

(3) An appropriation of $3,000 to carry on litigation to uphold the medical law. (The Governor has signified his willingness to sign such a bill.)

(4) The county clerks should be required to report deaths, removals within their counties and removals from the State.

(5) One thousand dollars per annum for clerical assistance.

The three leading institutions of the State—the Fort Wayne College of Medicine, the Central College of Physicians and Surgeons and the Medical College of Indiana—have within the last year united their forces and prestige with Purdue University. The splendid work these institutions accomplished for medical education under the old regime is familiar to all. The many friends and alumni of these old institutions will view their passing with regret, but we must all feel that it is a great step in the evolution of a representative institution of medicine in this State, in which every physician who has the interests of medical education in the State at heart must feel a pride. This should be an institution owned and controlled by the State of Indiana, with its faculty recruited from the ranks of the profession throughout the State wherever genius for teaching is to be found, with the prime object of giving the community the most competent medical men.

In an interview with President Stone, of Purdue University, as to the probable policy of Purdue in its management of the medical school, he stated that, "In the first place, it is to be assumed that the administration of the university, which has been so successful in developing its departments of pure and applied science on sound lines, will extend the same methods and principles to the medical school. There is no reason to expect any other result than that the medical school will essentially have at least equal standing with the other departments of the university for thorough scientific and effective instruction.

"My conception," he says, "of the medical school is that it is a strictly scientific institution engaged in teaching or in searching for the truth; that all of its resources must be utilized to this end and nothing be tolerated which does not contribute thereto. Between this conception and the ordinary proprietary medical school there is, you will observe, a wide gap.

"A department of instruction of a State university will have behind it actual and potential resources which will enable the employment of paid teachers to a considerable extent. From its class rooms must eventually be eliminated the advertising or personal motive which so frequently enters into medical instruction. Those selected to teach will be chosen for merit and ability in their particular fields and not for personal or other reasons incompatible with scientific teaching.

"It is further my view that the medical school is to be an organic part of the university, sharing in its progress and in its high standing in the State. The notion that it is or can remain a local institution, or that it can be dominated by local people or interests is quite incompatible with this idea.

"I also expect to see the school assuming a permanent and steady policy as regards equipment and operation. Its laboratories to be better equipped and cared for; the standards of student requirements in scholarship and conduct to be raised and more rigidly enforced; in short, that the best facilities, good teaching and high standards shall prevail there to the same extent that they now exist in the departments at LaFayette.

"I realize that the attainment of these ideals will not be easy. In some respects it must be a matter of growth; in others of evolution; in others of radical treatment. The first step in the process has already been taken. Now must follow the work of educating and inspiring the sympathetic aid and co-operation of the profession along right lines. Not until the legislature ratifies the existing agreement and formally and legally makes the medical school a part of Purdue University can this effective management be undertaken. When this is accomplished my plan and policy will be to proceed strictly as outlined above, but always in a constructive and not a destructive way.

"It will be my effort to preserve all that is of value in the present organization and to add to it, strengthen it and develop it just as rapidly as possible towards the ends which I have indicated."

L. F. PAGE, Chairman.
EDWIN WALKER.
J. B. BERTELING.

REPORT OF DELEGATE TO INTERNATIONAL MEDICAL CONGRESS AT LISBON, PORTUGAL.

DR. GEO. W. MCCASKEY, OF FORT WAYNE, DELEGATE.

Dr. G. W. McCaskey, as the delegate of the Indiana State Medical Society to the Fifteenth International Medical Congress at Lisbon, Portugal, April 19 to 26, 1906, submitted the following report:

The Fifteenth International Medical Congress, which has just passed into the history of great medical gatherings, has been a brilliantly successful affair in spite of many unfavorable circumstances, both inherent and accidental. The selection of Lisbon, Portugal, as the place of meeting, due to an accidental oversight in deferring this question until the closing hours of the previous congress, was unfortunate in several respects, among which may be mentioned its proximity to Madrid, where the last congress was held, and its peculiarly inaccessible situation. No regular line of transatlantic vessels touches at Lisbon, and the forced railway journey from Gibraltar over the poorly equipped roads of the mountainous country of southern Spain, the average speed being fourteen miles an hour, and sleepers rarely available, is something worth experiencing once as an adventure and then forever shunned. The service from Paris, however, is not quite so bad.

In spite of these antagonistic influences and the well recognized scarcity of conspicuous exponents of scientific medicine in the Spanish peninsula, thus robbing it of a certain attractiveness which would linger in the atmospheres of New York, Paris, London or Berlin, a large number of representative men from the leading countries of the world came forward with contributions, many of them notable in character and most of them of a high order.

The preliminary work in the way of correspondence, circulars of information, arrangement of programs, places of meeting, entertainments, etc., had been admirably done. With the exception of the opening session every session, both general and sectional, was held with room to spare in the magnificent Ecole de Medicine, of which any country might be proud, and which by strenuous effort had been completed in time for the congress.

One thing worth commenting upon was the registration machinery, which was literally swamped within three or four hours from the time when the streams of delegates began to pour in. We were sent from one room to another in a distant part of the building, and would be informed that our cards would be ready in an hour. Very soon we were given a

general card, which we were told would serve in lieu of all the invitations for that day, and that the formal cards would be ready on the following day. I have seen five times as many handled in the same time without a halt in the registration bureau of the American Medical Association.

The congress was formally opened by the Queen of Portugal, who is a regularly educated physician, in the large hall of the Geographical Society, in the presence of a brilliant audience filling the hall and two galleries surrounding it. Although the function occurred at 2 p. m., the audience was in full evening dress, which I believe is required whenever royalty participates.

Coming now to the work of the congress, it was planned and executed on so stupendous a scale that anything like a full review would be impossible at this time. Its organization was divided into seventeen sections, much along the lines of the American Medical Association. Each section was officially represented by a president, three vice-presidents, two secretaries and an official board of eight members.

One of the most important features of the congress was the so-called official reports, which were prepared by men especially qualified to summarize existing knowledge on the subject selected. These reports were submitted to the proper officials in advance of the meeting, and those for each section were printed as a separate volume, which was ready for distribution to the members. In the section on medicine, for instance, these reports were by Saundby on the Treatment of Cirrhosis of the Liver; by Bernheim on the International Defense Against Tuberculosis; by Weichselbaum and Judice Cabral on Cerebro-Spinal Meningitis, and by Trunecek and Huchard on the Pathogenesis of Arterial Hypertension. The work on cerebro-spinal meningitis covers more than one hundred pages, while that on arterial hypertension has over fifty pages. The entire volume contains two hundred and thirty pages. If each of the seventeen sections has a similar volume it would make over three thousand pages of official reports of this character by selected men all over the world. Such a series of contributions may well be supposed to have the highest value, and this is undoubtedly true of those which I have examined.

These official reports are entirely apart from the communications which make up the routine work of the sections. An attempt was made to influence the choice of subjects of these papers by recommendations made by a committee. In the section on medicine again the subjects recommended were a clinical study of the colon bacillus, dyspnea in febrile diseases and meningeal hemorrhage. A careful comparison of these recommendations with the papers actually offered in the program does not show any very general response, the members naturally selecting the subject in which they were especially interested without much reference to the subject proposed for discussion. Nevertheless I am inclined to think that both of these features of the International Medical Congress could be adopted to advantage, perhaps with modifications, by both the

Indiana State Medical Association and the American Medical Association. Such a course would, it appears to me, tend to equalize and systematize society work and insure suitable discussion of many vitally important questions which are very liable to be omitted from the list of titles voluntarily offered. This is met in this country in some measure by symposia on different subjects, and this, perhaps, if more generally adopted, would serve the same end. In the program of this very session of the Indiana State Medical Association and the forthcoming meeting of the American Medical Association carefully arranged symposia are prominent features.

One of the greatest obstacles in the work of an international congress of this sort is the diversity of languages. French, German and English were the official languages used, but owing to the close proximity to France naturally the affair was very largely a French one. Next in order came the German, followed by English, Italian, Spanish, etc. Abstracts of papers in at least two languages were commonly distributed through the sections prior to the reading. I had such an abstract of my own paper in French and German thus distributed.

Just a word in conclusion with reference to the American part of the program. The number of American contributions was not large, but I think that a careful comparison with those made by European members of the congress will reflect great credit upon the former. One of these contributions, viz., the address of Dr. Nicholas Senn on the International Investigation of Cancer, has already been published in the Journal of the American Medical Association and will compare favorably with any other contribution made. On the whole I can not refrain from expressing the decided opinion that America has ceased to sit at the feet of Europe for its medical inspiration, and that the latter will find quite as much profit in coming here as we will in going there.

REPORT OF COMMITTEE ON STATE MEDICINE AND HYGIENE.

By J. N. Hurty, Chairman, Indianapolis.

STATE MEDICINE.

Laws: The Legislature not having been in session since the last report, there are no new laws to record. Several cities and towns have passed the special sanitary ordinance which was written by the attorney-general in conference with the State Board of Health. The said ordinance may be found in the Book of Instructions to Health Officers issued by the State Board.

CASES AND JUDGMENTS.

Under the Medical Law: The attorney for the State Board of Medical Registration and Examination reports seven actions brought in different parts of the State, with judgments, for practicing without a license. Two suits have been brought against the board seeking to enjoin it from revoking licenses of physicians who were charged with producing criminal abortions. One suit was decided in favor of the board by the Delaware County Court, and the other is now pending in the Marion County Court.

The case of John R. Foster vs. the Board, seeking to enjoin the board from enforcing sections 2 and 3 of the rules adopted by the board and known as the "Rules of Minimum Requirements for Medical Colleges to be Accounted in Good Standing," has been decided in favor of the board, the court holding that the regulations were reasonable and within the power of the board.

Other cases are still pending in Vigo, Bartholomew, Marion, Fayette and other counties.

Charges have been made against three persons and their certificates and licenses revoked.

Charges seeking the revocation of their licenses have also been filed against six persons, and the cases are now pending.

Under the Dental Law: The State Board of Dental Examiners report four suits against offenders, but no judgments secured. In regard to legal procedures for violation of the dental law the secretary of the board says:

We find it very difficult to secure the co-operation of the county prosecutors, and in many instances very little attention is paid to our cases. Our law is weak in the definition of the "practice of dentistry"

(Sec. 24), and the board is usually handicapped by lack of funds, yet we have managed to break up a great deal of illegal practice over the State, a mere warning being oftentimes sufficient to cause the offender to stop or to comply with the law.

Under the Pharmacy Law: The Board of Pharmacy reports only two prosecutions for violation of the pharmacy law, both of which failed. The secretary makes a statement much like that of the secretary of the dental board.

Under the Health Law: Twelve prosecutions for violation of quarantine have been successfully prosecuted, and two for failure to report contagious diseases and five for failure to report both. A notable case occurred in Jackson county. The health officer employed a physician to attend some cases of smallpox and to look after quarantine. His bill of $325 was rejected by the commissioners. The court awarded the amount.

HYGIENE.

An important hygienic event during the year was the tuberculosis exhibition held the week commencing March 5, 1906, in Tomlinson Hall at Indianapolis. The exhibition consisted of charts showing statistics, photographs and pictures of sanatoria tenements, squalid homes, sweat shops, etc., all causitive of tuberculosis; models of sleeping shacks, special tents, window tents and a variety of objects useful in the cure and prevention of consumption. The exhibition was held under the auspices of the Commercial Club of Indianapolis. The fact that practical business men were sufficiently interested in the matter to take hold and push such an exhibition is certainly a cause for congratulation. The Governor, Lieutenant-Governor and Mayor of Indianapolis all attended. Governor Hanly failed to preside and address the audience the opening evening because of a mistake made in dates of engagements. The opening address was made, however, by Dr. A. W. Brayton. Lieutenant-Governor Miller and Mayor Bookwalter presided and made addresses on different evenings. Addresses were made by well-known speakers every afternoon and evening during the exhibition. Five thousand one hundred and twenty-eight persons attended during the week. The pathological exhibit from the Medical College of Indiana, the medical department of Purdue University, attracted much attention.

The State Laboratory of Hygiene has been open and serving the public since last October. This laboratory was authorized by the legislation of 1905. It consists of two divisions, namely, bacteriological and pathological, and chemical. The first division receives specimens for examination from physicians to aid in diagnosis. Samples of sputum and blood and diphtheria cultures are examined free at all times for all persons, the State board furnishing outfits free, but pathological specimens are examined only when the patient is poor and unable to pay a practicing pathologist. The laboratory makes no charges under any circumstances.

The Chemical Division is devoted principally to making food and drug analyses for the enforcement of the pure food and drug laws. It has, however, a water laboratory wherein water analyses are made without charge. The reports of the chemical laboratory to May 1, 1906, show that over 2,800 samples of foods and drugs have been analyzed, and that 45 per cent. of all samples were either adulterated or not up to standard. The wide publication of results has had a far-reaching influence, resulting in materially reducing the great evil of adulteration.

Needed sanitary legislation is a strengthening of the pure food and drug law. The weak point in this law is having to prove the accused knowingly sold adulterated articles. This word should be stricken out, for convictions are not possible under it. The dealer can protect himself from imposition by manufacturers by simply requiring a guarantee for his purchases. A law better than the one now on the statute books for the protection of the streams from pollution is much needed. Indeed it is imperative. The time is coming when the larger cities must depend upon filtered surface water, for the experience at Indianapolis, Muncie and other places shows that deep wells give out. Besides this it is wrong in itself to deliberately pollute streams which should carry health and refreshment through the land.

A law compelling the reporting of births and cases of contagious disease is much needed. The birth and contagious disease statistics of Indiana are faulty because the law is not sufficient. The necessity of collecting such statistics need not be argued; therefore there should be a new law or the old one should be strengthened.

The Mortality Statistics, which are very correct, owing to our very efficient law, show a reduction in the death rate of 0.3 under the average for the preceding six years. This means 780 fewer deaths in one year. Improved sanitation and more thorough and scientific application of curative medicine may properly be credited with this saving. The diphtheria death rate has fallen from the average, 16.6 per 100,000, in the last six years, to 12.3 in 1905. This means a saving of 111 lives annually. This must be almost entirely the work of antitoxin, for the prevalence of the disease shows no diminution.

EPIDEMICS.

Smallpox: Smallpox has continued to exist in the State every week during the last year. The mildness of the disease continues. For the year ending May 1, 1906, there were reported 835 cases with 11 deaths. The number of cases reported is unreliable, but the number of deaths is accurate. The disease was epidemic in 67 localities, which is 100 fewer than the preceding year. Notable epidemics occurred in Allen County in November and December, 1905, and January and February, 1906, the cases reported numbering 208 and deaths 9. In Washington County in November and December, 1905, cases 25 and deaths 6.

Typhoid Fever: This disease, which is a reproach to a community,

was reported from every county in the State during the year. Epidemics occurred in many places. At Cambridge City, in October and November, 36 cases were reported with three deaths. An investigation was made by the State Board. Twenty samples of water were analyzed, seven being found polluted. It was the opinion of the inspecting officer that flies had been active agents in spreading the disease, for at the time of the inspection several running over privies were found within the area of prevalence, flies were plenty and physicians had neglected to give directions in regard to disinfecting discharges. Neglect in this matter can not be reckoned among the beneficent acts of the profession. Severe cases of illness variously diagnosed as malaria, debility, continued diarrhea, etc., were carefully examined, blood tests being made. Of the seven cases, five showed pronounced Widal reactions, and were therefore typhoid fever.

At the Soldiers' Home at Lafayette a curious typhoid situation was discovered. Two pronounced cases occurred, and the question was where did the infection come from. The home is beautifully situated on high ground, and is such in all its surroundings as to seemingly preclude any filth disease. To study the matter Dr. Knabe, assistant in the bacteriological division of the State Laboratory of Hygiene, was installed at the home with microscope and full outfit for blood and urine tests. Ten days were spent in reviewing the situation. It was found that the first case appeared in September, 1903, about two years before, being the son of the commandant, the young man coming home with the disease. The subsequent cases were most probably caused by secondary infection. At the time of the inspection Dr. McGauhey, assistant physician, was low with the disease, and since then Dr. Widup, another assistant, has had a severe attack. Analyses proved the water supply to be without fault, a fact to be inferred from the surroundings. The unsanitary construction of the hospital, with its bad water closets, screenless windows and open commodes with plenty of flies, and careless handling of the stools of patients supposed to have malaria or other diseases than typhoid, accounts fully for the spread of the infection. At the time of the investigation sixty-four cases of typhoid were discovered by blood and urine tests. Most of the cases were mild in character and had been diagnosed as malaria, debility, marasmus, and one had been pronounced "an obscure heart trouble." Only one death resulted from this outbreak. An epidemic at Etna Green, about ten miles east of Winona, occurred in September, 1905. The cases numbered 32, with 8 deaths. The origin and cause was not difficult to trace. The overflowing privies, which gave forth foul odors to almost every point in the town, the many dirty back yards and the polluted wells told the story. If people will insist upon eating and drinking their own excreta they must have typhoid fever.

Tuberculosis is still epidemic. The year ends with 4,492 deaths. Not a county or community of even medium size has escaped visitation. The consumptive, with pallid, wistful countenance and suppressed cough, is

seen in railway cars and stations, churches and schoolrooms, stores and offices, and in city and country homes.

The record of the havoc of consumption for the year is awful. Total deaths, 4,492; males, 1,591; females, 2,801. Mothers in the extra useful age period of 18 to 40, 987. Fathers in the same age period, 315. Orphans made under 12 years of age, 2,486, and homes visited, 3,553. As recorded in the report of last year, a tuberculosis commission was created by the legislature of 1905 to inquire into the tuberculosis situation in Indiana and report upon the matter with recommendations to the General Assembly of 1907. That commission is working hard and will do its full duty. Your committee thinks that the subject of early diagnosis should be emphasized. It is a daily occurrence at the State Hygiene Laboratory to receive letters which very plainly show that the physician is waiting for the appearance of the bacilli in the sputum before pronouncing his diagnosis. Such caution is rarely reasonable. If physicians are to generally pursue this course it will be impossible to make much progress in the fight against this awful disease. It would be a step forward if the State Medical Board at this time were to lay particular stress in its examinations upon the early diagnosis of tuberculosis by the clinical signs.

Diphtheria: Total deaths in 1905 were 328, an increase over the preceding year of 44. There are no epidemics of any moment to record, except one at Elwood where five children in the school were found to have diphtheria bacilli in their throats, although not seemingly sick. From this room four severe cases had proceeded. Remembering that the appearance of a marked case of diphtheria usually means the existence in that neighborhood of one or more mild cases, practitioners should upon such occasion make cultures from the throats of all children which come under their care.

Scarlet Fever: There were 133 deaths during the year. In the preceding year 192. There are recorded 35 outbreaks of scarlet fever, all of them mild, but most were attended with one or more deaths. Of course mild cases of scarlet fever are much to be feared, for they spread the infection to a greater degree than severe cases which are carefully avoided. There are frequent reports from the laity concerning lax preventive action, due to the declaration that the case is "only a mild one." We think it not inopportune to urge practitioners to inform the people when occasion requires in regard to the fact that a mild case of scarlet fever is as potent to transmit the disease as a severe case.

The table of deaths, arranged according to the international system, was left out in last year's report, and as its absence has been noted by several members and its addition requested, the same is appended for 1905.

DEATHS IN INDIANA DURING THE YEAR ENDING DECEMBER 31, 1905, STATISTICALLY CLASSIFIED BY THE INTERNATIONAL SYSTEM, WITH RATES PER 100,000 POPULATION, ESTIMATED ACCORDING TO UNITED STATES CENSUS BUREAU.

I. General Diseases—Epidemic.

Classification No.	*Causes of Death.*	*No. of Deaths.*	*Rate Per 100,000 Population.*
1.	Typhoid fever	928	35.0
2.	Exanthematous typhus	1	.03
3.	Recurrent fever	1	.03
4.	Intermittent and malarial fever	116	4.3
5.	Variola or smallpox	35	1.3
6.	Measles	6	.2
7.	Scarlatina	133	5.0
8.	Whooping cough	136	5.1
9.	Croup	38	1.4
9a.	Diphtheria	328	12.3
10.	Influenza	591	22.3
11.	Miliary fever	...	.....
12.	Asiatic cholera	...	.....
13.	Cholera nostras	26	.9
14.	Dysentery	218	8.2
15.	Bubonic plague	...	.....
16.	Yellow fever	1	.03
17.	Leprosy	...	.....
18.	Erysipelas	107	4.0
19.	Other epidemic diseases	2	.07
20.	Purulent septicemia and infection	285	10.7
21.	Glanders and farcy	...	.....
22.	Malignant pustule and anthrax	2	.07
23.	Rabies	3	.1
24.	Actinomycosis, trichinosis, etc	...	.....
25.	Pellegra	...	.....
26.	Tuberculosis of the larynx	58	2.1
27.	Tuberculosis of the lungs	3,940	148.7
28.	Tuberculosis of the meninges	151	5.7
29.	Abdominal tuberculosis	207	7.8
30.	Potts' disease	19	.7
31.	Cold abscess	4	.1
32.	White swelling	7	.2
33.	Other tubercular affections	49	1.8
34.	General tuberculosis	57	2.1
35.	Scrofula	17	.6
36.	Syphilis	58	2.1
36a.	Soft chancre	...	.....

Classification No.	Causes of Death.	No. of Deaths.	Rate Per 100,000 Population.
37.	Gonorrhea (five years and over)	...	.....
38.	Gonorrhea (under five years)	2	.07
39.	Cancer and other tumors of the buccal cavity	43	1.6
40.	Cancer and other tumors of the stomach and liver	519	19.5
41.	Cancer and other tumors of the peritoneum, intestines and rectum	141	5.3
42.	Cancer and other tumors of the female genital organs	194	7.3
43.	Cancer and other tumors of the breast	112	4.2
44.	Cancer and other tumors of the skin	79	2.9
45.	Cancer and other tumors of other organs	336	12.6
46.	Other tumors	52	1.9
47.	Acute articular rheumatism	133	5.0
48.	Chronic rheumatism and gout	120	4.5
49.	Scurvy	...	.....
50.	Diabetes	231	8.7
51.	Exophthalmic goitre	22	.8
52.	Addison's disease	8	.3
53.	Leukemia	32	1.2
54.	Anemia, chlorosis	88	3.3
55.	Other general diseases	40	1.5
56.	Alcoholism, acute and chronic	101	3.8
57.	Chronic lead poisoning	2	.07
58.	Other chronic poisonings (occupational)	1	.03
59.	Other chronic poisonings	12	.4

II. Local Diseases—Diseases of the Nervous System and Organs of Special Sense.

60.	Encephalitis	94	3.5
61.	Simple meningitis	352	13.2
61a.	Epidemic cerebro-spinal meningitis	460	17.3
62.	Progressive locomotor ataxia	51	1.9
63.	Other diseases of the spinal cord	136	5.1
64.	Congestion and hemorrhage of the brain	1,351	51.0
65.	Softening of the brain	110	4.1
66.	Paralysis, cause unspecified	901	34.0
67.	General paralysis	102	3.8
68.	Other forms of insanity	77	2.9
69.	Epilepsy	144	5.4
70.	Convulsions (not puerperal)	32	1.2
71.	Convulsions of infants	306	11.5
72.	Tetanus	71	2.6
73.	Chorea	10	.3

Classification No.	Causes of Death.	No. of Deaths.	Rate Per 100,000 Population.
74.	Other nervous diseases	139	5.2
75.	Diseases of the eye	2	.07
76.	Diseases of the ear	16	.6

III. DISEASES OF THE CIRCULATORY SYSTEM.

77.	Pericarditis	42	1.5
78.	Acute endocarditis	128	4.8
79.	Organic heart diseases	2,182	82.3
80.	Angina pectoris	165	6.2
81.	Diseases of the arteries, atheroma, aneurism, etc	156	5.8
82.	Embolism and thrombosis	63	2.3
83.	Diseases of the veins (varices hemorrhoids, phlebitis)	7	.2
84.	Diseases of the lymphatics, lymphangitis, etc.	9	.3
85.	Hemorrhage	67	2.5
86.	Other diseases of the circulatory system	...	.....

IV. DISEASES OF THE RESPIRATORY SYSTEM.

87.	Diseases of the nasal fossae	3	.1
88.	Diseases of the larynx	37	1.3
89.	Diseases of the thyroid body	3	.1
90.	Acute bronchitis	325	12.2
91.	Chronic bronchitis	215	8.1
92.	Broncho pneumonia	535	20.2
93.	Pneumonia	2,711	102.3
94.	Pleurisy	55	2.0
95.	Congestion and apoplexy of the lungs	358	13.5
96.	Gangrene of the lungs	10	.3
97.	Asthma	93	3.5
98.	Pulmonary emphysema	15	.5
99.	Other diseases of the respiratory system (phthisis excepted)	124	4.6

V. DISEASES OF THE DIGESTIVE SYSTEM.

100.	Diseases of the mouth and adnexa	17	.6
101.	Diseases of the pharynx	44	1.6
102.	Diseases of the esophagus	5	.1
103.	Ulcer of the stomach	59	2.2
104.	Other diseases of the stomach (cancer excepted)	619	23.3

Classification No.	Causes of Death.	No. of Deaths.	Rate Per 100,000 Population.
105.	Diarrhoea and enteritis (under five years of age)	1,700	64.1
105a.	Chronic diarrhoea	108	4.0
106.	Diarrhoea and enteritis (five years and over)	316	11.9
107.	Intestinal parasites	2	.07
108.	Hernia and intestinal obstructions	302	11.4
109.	Other diseases of the intestines	128	4.8
110.	Acute yellow atrophy of the liver	11	.4
111.	Hydatid tumors of the liver	...	.....
112.	Cirrhosis of the liver	205	7.7
113.	Biliary calculi	50	1.8
114.	Other diseases of the liver	312	11.7
115.	Diseases of the spleen	8	.3
116.	Simple peritonitis (not puerperal)	338	12.7
117.	Other diseases of the digestive system	3	.1
118.	Appendicitis and abscess of the iliac fossae	194	7.3

VI. Diseases of the Genito-Urinary System.

119.	Acute nephritis	189	7.1
120.	Bright's disease	1,423	53.7
121.	Other diseases of the kidneys and their adnexa	51	1.9
122.	Calculi of the urinary tract	6	.2
123.	Diseases of the bladder	85	3.2
124.	Diseases of the urethra	6	.2
125.	Diseases of the prostate	45	1.6
126.	Diseases of the male genital organs	1	.03
127.	Metritis	3	.1
128.	Uterine hemorrhage (non-puerperal)	10	.3
129.	Uterine tumor	17	.6
130.	Other diseases of the uterus	22	.8
131.	Cysts and other ovarian tumors	21	.7
132.	Other diseases of the female genital organs	15	.5
133.	Non-puerperal diseases of the breast	...	.....

VII. Puerperal Diseases.

134.	Accidents of pregnancy	46	1.7
135.	Puerperal hemorrhage	16	.6
136.	Other accidents of labor	21	.7
137.	Puerperal septicemia	178	6.7
138.	Albuminuria and puerperal eclampsia	37	1.3
139.	Phlegmasia alba dolens, puerperal	...	.....
140.	Other puerperal accidents	23	.8
141.	Puerperal diseases of the breast	...	.....

VIII. Diseases of the Skin and Cellular Tissues.

Classification No.	Causes of Death.	No. of Deaths.	Rate Per 100,000 Population.
142.	Gangrene	119	4.4
143.	Carbuncle	14	.5
144.	Acute abscess, phlegmon	27	1.0
145.	Other diseases of the skin and adnexa	19	.7

IX. Diseases of the Locomotor System.

146.	Affections of the bones	26	.9
147.	Arthritis and other diseases of the joints	4	.1
148.	Amputation	1	.03
149.	Other diseases of the organs of locomotion	...	.....

X. Malformations.

150.	Malformations	167	6.3

XI. Diseases of Infancy.

151.	Congenital debility, icterus	1,184	44.7
152.	Other diseases of early infancy	66	2.4
153.	Lack of care	658	24.8

XII. Diseases of Old Age.

154.	Senile debility	1,296	48.9

XIII. External Causes.

A.—Suicides.

155.	Suicide by poison	140	5.2
156.	Asphyxia	4	.1
157.	Hanging or strangulation	53	2.0
158.	Drowning	14	.5
159.	Firearms	94	3.5
160.	Cutting instruments	7	.2
161.	Jumping from high places	1	.03
162.	Crushing	...	.....
163.	Other suicides	25	.9

B.—Accidents.

164.	Fractures	243	9.1
165.	Dislocations	5	.1
166.	Other accidental injuries	793	29.9
167.	Burns and scalds	179	6.7

Classification No.	Causes of Death.	No. of Deaths.	Rate Per 100,000 Population.
168.	Burning by corrosive substances	...	.....
169.	Sunstroke	19	.7
170.	Freezing	5	.1
171.	Electrical shock	44	1.6
172.	Accidental drowning	144	5.4
173.	Inanition	167	6.3
174.	Inhalation of noxious gases (not suicidal)	23	.8
175.	Other acute poisonings	63	2.3
176.	Other external violence	110	4.1
	C.—Homicides.		
176a.	Homicide	84	3.1
176b.	Mob violence	1	.03
	XIV. Causes Ill-Defined.		
177.	Dropsy	168	6.3
178.	Sudden death (not puerperal)	1	.03
179.	Causes not specified or ill-defined	213	8.0
	XV. Stillbirths.		
180.	Stillbirths	2,236	84.4
	All causes	36,502	1378.1

REPORT OF COMMITTEE ON TUBERCULOSIS.

DR. THEODORE POTTER, CHAIRMAN.

The anti-tuberculosis movement, now thoroughly established in every civilized country, grows in strength and significance with each passing year. And each year brings, as the result of investigation and experience, clearer and more uniform views of the necessities and possibilities of the crusade against this great disease.

The most significant event of the past year in the anti-tuberculosis movement in this country was the series of tuberculosis exhibitions held in a number of American cities. As already recorded in a former report, the first important exhibit of this kind was held in Baltimore two years ago. The results were such that during the past winter a similar thing was attempted on a more elaborate scale in New York city. Under the auspices of the National Association for the Study and Prevention of Tuberculosis and the New York Charity Organization Society's Committee on the Prevention of Tuberculosis a notable exhibit and parliament was held. This exhibt included a display of things interesting and instructive in the sociology, pathology, treatment and prevention of tuberculosis. At the same time a series of addresses, lectures and demonstrations was given from day to day, extending over a period of two weeks. Popular and professional interest was great and the attendance numbered many thousands.

In response to a general demand the New York exhibit was taken to Boston, Philadelphia, Newark, N. J., and thence to Indianapolis upon the invitation of the Commercial Club. Here it was exhibited for a week in Tomlinson Hall under the auspices of the City and State Boards of Health. Each afternoon a lecture was given upon some practical phase of the subject, and each evening a formal address was delivered to a popular and professional audience. The interest and attendance grew with each day, so that on the last evening, when Drs. Klebs and Babcock, of Chicago, made addresses upon the Municipal Control of Tuberculosis and the Promise of Victory Over Tuberculosis, an audience of more than a thousand heard them.

These exhibits and parliaments here and elsewhere have unmistakably done much to bring the profession and the public together upon the question of combatting tuberculosis and to scatter widely a concrete and definite knowledge of what should and can be done.

Upon the patnology, diagnosis and treatment of tuberculosis there is nothing in the way of radical change or progress to report. There is still

much discussion of latent tuberculosis dating from childhood, according to the theory of Baumgarten; upon the relation of human and bovine tuberculosis, stimulated by the famous London address of Koch, and upon the prospects and possible methods of immunity. Those who would be enlightened upon these matters would do well to read the articles by Theobold Smith recently published in the Journal of the American Medical Association. They leave almost nothing at present to be said.

Upon the question of early diagnosis, so important for successful treatment, more and more stress is being laid upon those things which should lead to a suspicion of tuberculosis and upon the physical diagnosis. It is therefore of the greatest importance that medical colleges and post-graduate schools should take special pains to teach and train their students in the rational and physical diagnosis of early tuberculosis. The laboratory diagnosis is in most cases valuable chiefly in the direction of preventive medicine. In this direction the State Laboratory of Hygiene, now in operation under the State Board of Health, is already doing much valuable work.

The State Tuberculosis Commission appointed by the Governor is steadily at work upon the duties assigned to it. Its work is that of investigation and advice. It has inspected a number of tuberculosis sanatoria in the West, and will soon visit those, notably the State institutions, of the East. These studies in the field make it plain that—so far at least as the public charitable sanatoria are concerned—the development is strongly along the line of simplicity, efficiency, economy and the greatest good to the greatest number are to be best attained upon this plan.

Along the line of investigating the situation in Indiana and obtaining a correct view of public sentiment the commission is about to send to the medical societies of the State a letter of inquiry asking for a definite expression upon certain definite questions. It is earnestly desired and requested that this letter of inquiry be promptly and deliberately acted upon by the county societies, for the commission intends to tabulate the answers in the form of a statement to the Governor and the legislature of professional opinion upon the questions submitted.

The accumulating studies and experiences of practicing physicians, sanitarians, charity organization workers, sociologists and interested laymen are crystallizing more and more definitely the views upon the things of most importance in the contest against tuberculosis and the lines along which our efforts should be chiefly directed. These are:

First. The campaign of education, professional and popular, to diffuse knowledge upon the nature, methods of propagation, diagnosis, treatment and prevention of tuberculosis. Of this educational campaign the tuberculosis exhibits, conferences, lectures, articles in the daily press and the popular magazines and symposia in medical societies are a part.

Second. Enlargement of the duties and powers of the public health authorities in dealing with the whole matter of tuberculosis.

Third. Enlargement of the scope and resources of charitable societies, visiting nurses' associations and similar organized bodies for aid in the care of the tuberculous poor.

Fourth. Larger provision in special institutions or in departments of general hospitals and dispensaries for the care of advanced consumptives.

Fifth. Larger provision, both by public charity and private philanthropy, and by private professional enterprise for the institutional treatment of early tuberculosis.

Sixth. A more general professional and popular conviction, clear, definite and sane, regarding tuberculosis as a house infection disease. When we have all come to recognize the significance of the doctrine that tuberculosis is really an infectious disease and chiefly a house infection, the contest against tuberculosis will be more than half won.

THEODORE POTTER,
G. T. M'COY, Columbus.
ROBERT HESSLER, Logansport.
GEORGE KNAPP, Vincennes.
GEO. W. M'CASKEY, Ft. Wayne.

REPORT OF COMMITTEE ON INEBRIETY.

DR. GEO. R. GREEN, MUNCIE, CHAIRMAN.

Your committee on inebriety begs leave to submit the following as its report:

From time to time, and at almost every annual meeting of the State Association this committee has deemed it its duty to submit a scientific report touching the status of the question of inebriety; but at this time we feel it our duty to ask the Association to place itself upon record, and to no longer be satisfied with presenting gleanings and personal conclusions.

There seems to be an era of State control approaching, and your committee, after years of study, which for some of its members reaches over a period of ten years or more, have come to the conclusion that it is time for Indiana to go to the front in the matter of the care of unfortunate victims of their own folly in the matter of acquiring alcoholic and drug habits, in which they now find themselves, as far as they are concerned, hopelessly enmeshed.

A few of the States of the Union have already established institutions for the care and treatment of these unfortunates, which from our investigations are proving the value of the method. Iowa has for one year had such a place and it is already taxed to its utmost capacity, showing how gladly these victims avail themselves of a possible means of relief. Alabama is now preparing a bill for the establishing of such an institution as Iowa already has, and other States are following. England, on whose flag the sun never sets, has numerous similar institutions under governmental control which are doing much to relieve the pauperism and crime of the land, as well as restoring many to lines and lives of usefulness. It is said that from a monetary standpoint every producing life is worth to the State the sum of five thousand dollars, and that every nonproducing or pauper life will require at least the income from an equal amount.

Your committee has drafted a proposed bill that it wishes to recommend to your body and ask that it be referred to the Committee on Legislation, with instructions to secure advantage of the earliest opportunity to have the bill made a law; and this committee, or the present members of the committee, stands ready to aid said committee in any way possible to secure early and favorable legislative action on the same.

The following bill has been the result of ten years' study of the matter by some of the members of this committee and of the very valuable aid of those who have served on the committee from time to time.

We further ask that the bill herein submitted and made a part of this report be printed in full as a part of our report, that the entire pro-

fession of the State may become familiar with it, and through the activity of the members of the State Association the people of the State may be aroused to greater activity in the matter.

We believe that many valuable lives can be saved to the State by the action of this bill, and that many young men can be rescued early in their descending career in this way; that the almshouses, prisons and insane asylums will be unloaded or persons kept out of them by the action of this law to the extent of almost supporting this institution. The following is the bill:

A BILL for an act to establish and maintain the Indiana Hospital for Inebriates, and providing for the commitment of patients thereto, providing revenues for the same, making provisions for rules and regulations governing the same, prescribing penalties for violations of certain provisions of this Act, repealing all existing laws in so far as they conflict with the same, and declaring an emergency.

SECTION 1. Be it enacted by the General Assembly of the State of Indiana, That there shall be established and maintained in this State, at such a place as may be hereafter selected by the Board of Trustees, in the State of Indiana, easy of access, an institution to be known as the Indiana Hospital for Inebriates. The general charge and management of said institution shall be entrusted to a Board of Trustees consisting of three members who shall be appointed by the Governor of the State. Said board shall be a body politic and corporate, to be known as the Trustees of the Indiana Hospital for Inebriates, by which name said board may sue and be sued, plead or be impleaded in any court in this State. One member of said board shall be a reputable physician proficient in the treatment of alcoholism and the drug habit. And each of said trustees shall be a legal voter of the State of Indiana and a taxpayer in said State. Said board shall be appointed immediately after the taking effect of this act. Each member of said board shall hold office as such for the term of three years, and until his successor shall be appointed and qualified; provided, that one of the members first appointed, to be designated by the Governor in making the appointment, shall serve for a term of one year, one for two years and one for three years, and until his successor shall be appointed and qualified; and annually thereafter the Governor shall appoint one member as above qualified to serve for three years. And the member having the shortest term to serve shall be by virtue of his term president of the board. Provided further, that any member of said board may be removed from office by the Governor at any time for cause, said cause to be stated in the order of removal, and any vacancy so caused shall be filled immediately by appointment by the Governor, and a trustee to fill a vacancy shall hold said office for the unexpired term of his predecessor only; but any trustee shall be eligible to reappointment at the expiration of his term of office.

Every trustee, before entering upon the duty of such, shall take and subscribe to an oath to honestly, faithfully and impartially discharge the duties of said office.

Each trustee shall be allowed as compensation for services rendered as such ten dollars ($10) per day for time actually spent in duties of said office, together with necessary traveling expenses, and no other salary or compensation shall be granted said trustees as such; which per diem and expenses shall be paid out of the State fund in the same manner and under the same rules as trustees of other State institutions.

SECTION 2. Said trustees shall elect one of their number as president of said board, another as treasurer thereof, and a secretary thereof, who may be the third member thereof. The secretary shall keep a full and accurate record of all proceedings of said board in a book or books used for such purpose only.

The treasurer, before entering upon his duties as such, shall file in the office of the secretary of state a bond, payable to the State of Indiana, in such sum and with such sureties as shall be approved by said secretary, conditioned for the faithful accounting by him and the proper payment of all moneys that shall come into his hands as such treasurer. Such bond to be procured from some surety company satisfactory to such secretary, and the fee for such bond to be paid out of the State treasury on warrant drawn by the State auditor. Said treasurer shall serve as such without other compensation than his per diem as trustee.

SECTION 3. The purpose of this institution shall be to care for, support, administer proper medical treatment to all persons who may be admitted into said institution under the regulations provided therefor, as inebriates; and the word "inebriates" shall be construed under this act to mean all persons who are habitual or periodical excessive users of spirituous, vinous or malt liquors, cocaine, morphine, opium, hydrate of chloral or other narcotic drugs or their preparations.

SECTION 4. Said trustees are hereby directed to purchase for the use of said institution suitable land within the State of Indiana, easy of access, not less than 160 acres, at a cost not to exceed $18,000. Said trustees, after agreeing upon the purchase of said land, shall take a warranty deed in fee simple, with abstract showing clear title therefor in its corporate name, for the use of the State of Indiana. Upon presentation to the auditor of state of the certificate of said board showing such purchase and the amount of purchase money so agreed upon, he shall draw his warrant upon the treasurer of the State in favor of the treasurer of said board for such amount, which warrant shall be paid out of any moneys in the State treasury provided for such purpose. And said board of trustees shall, as soon as said lands shall have been purchased and a proper deed executed and delivered as provided in this section, proceed as speedily as possible in the erection and shall erect a suitable building or buildings for said hospital on said lands, and they shall also, as soon as the said building or buildings shall have been completed, purchase the necessary supplies and properly furnish said hospital. Said board shall present to the auditor of state a certificate showing the amount due any contractor, architect, person or persons for work and labor done, materials, supplies or furniture furnished in the erection and equipment of

said hospital; and upon the presentation of such certificate the auditor of state shall draw his warrant upon the treasurer of state in favor of the treasurer of said board for such amount, which warrant shall be paid out of any moneys in the State treasury for such purpose. And $40,000 shall be appropriated for the purchase of said lands, the construction of buildings, furnishing and equipping said hospital.

SECTION 5. Said trustees shall meet as often as may be necessary to properly discharge their duties, but they shall hold at least one meeting at said hospital each month, and at all meetings of said board two members thereof shall constitute a quorum for the transaction of any business. Said board shall also make any and such orders, rules and regulations as will carry into effect the provisions of this act. On the 31st day of October of each year said trustees shall make a full and detailed report of their acts as such, and of the condition of said hospital, the receipts and expenditures thereof, the number of employes, indicating the duties and compensation of each of them, the number of patients in said hospital, showing how they are treated medically and how cared for, and making such suggestions and recommendations as may seem proper to said trustees, which report shall be filed in the office of the secretary of state and shall be printed for public information, which report shall be paid for out of the fund for publishing other official reports of the State.

SECTION 6. Any person appointed and qualified as a member of said board shall not be eligible for any other office or place connected with said institution, except as hereinafter provided, during the term for which he shall have been appointed; and a trustee or other officer or employe of said institution shall not be directly or indirectly interested in any contract relating to the buildings, grounds, materials, supplies or any other article provided for said hospital.

SECTION 7. Said trustees shall have authority to receive for the use of said institution gifts, legacies, devises and conveyances of property, real or personal, that may be made, given or granted to or for said institution or in the name of said board.

SECTION 8. Said trustees shall cause all property of said institution liable to be destroyed by fire to be kept insured in responsible insurance companies, and shall cause to be provided and kept in good repair necessary and proper appliances for the prevention and extinguishment of fire, and proper fire escapes.

SECTION 9. Upon the filing of a petition by any resident of the county, incorporated town or incorporated city, before any circuit or presiding judge of said county, either in term time or vacation, alleging that any person who shall be at the time a bona fide resident of such county, incorporated town or incorporated city therein, is an habitual or periodical excessive user of spirituous, vinous or malt liquors, or either of them, cocaine, morphine, opium, hydrate of chloral or other narcotic drugs or their preparations, such judge shall cause a warrant to be issued against the person so complained of in such petition, commanding the sheriff to bring such person forthwith before him. And when such person shall

have been brought before such judge he shall be required to plead to such petition, and the court shall cause summons to be issued on behalf of the petitioner, and shall proceed to trial upon default of plea, as provided in the practice of trials in civil causes in such court; Provided, That should such person demand a trial by jury, such judge shall fix the day for such trial at the earliest possible time in term time of such court at which such trial may be had and such person be tried by a jury; Provided further, That if, upon the admission by such party complained of, of the truth of the allegations of the petition filed before such judge, at any time, or upon the investigation by such judge in vacation, or if the jury shall find upon the trial of such cause that the allegations of such petition be true, such court shall make an order that such party complained of shall forthwith be taken by the sheriff of such county and confined in this institution until duly discharged or paroled by the superintendent and the board of trustees of such institution: Provided further, That if upon investigation of the allegations of such petition the court or jury shall find the same to be untrue, said party complained of therein shall be immediately discharged, and the costs shall follow the same rules as in criminal cases; Provided further, That such judge shall at the examination of the party complained of as provided in this act, make an investigation of the financial standing of such person, and if he shall find that such person is at the time in indigent circumstances or unable to defray the expenses of such investigations, care and treatment in such institution, he shall certify such fact to such institution, and such person shall be received therein as provided in this act, free of charge, and the costs of such investigations and transportation shall be taxed to the county where such investigations were made; Provided further, That if, upon investigation by the court, it shall be found that the party complained of is financially able to pay the costs of such investigations, transportation to such institution and the care and treatment therein, the estate of such inebriate shall be liable for his or her support therein; and the costs and expenses of any of the proceedings herein provided for shall be paid in the manner and by the person or party that the court or judge before whom the case shall be had shall order and direct, and such court or judge is hereby authorized to issue his execution for such costs accordingly; Provided further, That no person who shall be admitted or received into such hospital as an inebriate as defined in this act shall be detained therein for a period at any one time of less than four months nor more than two years, except as hereinafter provided.

SECTION 10. Any person who shall make application in person or by parent or guardian to this institution for admission as an inebriate as defined in this act, for care and medical treatment therein, and who shall pay or secure the payment to the treasurer of such institution a sum not less than five dollars a week, the amount thereof to be fixed by the superintendent, such person shall be admitted therein and shall receive the same care and medical treatment and be governed by the same rules and regulations as are the other patients therein; Provided further, That

such person shall be at the time of his admission a bona fide resident of the State of Indiana.

SECTION 11. Whenever any information shall be received by any judge of a court of this State that any person is unjustly deprived of his liberty, by being confined or restrained in the hospital established as provided in this act, such judge shall appoint a commission of three persons, who shall hear such evidence as may be offered touching the case, two of whom shall be practicing physicians of good standing, and without summoning such person before them shall have one or more private interviews with such person, and shall also make due inquiries of the superintendent having charge of such hospital. Said commission shall, within a reasonable time, make report to said judge, and if in their opinion the party is not legally detained or is fully cured or recovered, said judge shall issue an order for his or her immediate discharge. Such judge shall allow a reasonable compensation for traveling and other expenses and time to such commission, which allowance shall be paid out of the treasury of the county from funds set apart for that or like purposes.

SECTION 12. The commission provided for in Section 11 of this act shall not be repeated, in respect to the same party, oftener than once in six months.

SECTION 13. The board of trustees shall appoint a superintendent, who shall be a reputable physician and a legal voter of the State of Indiana, and who shall be proficient in the care and medical treatment of inebriates as defined in this act, whose duty it shall be, under the direction of the board of trustees, to superintend the general affairs of the hospital; and they shall have the power to remove him for any cause impairing his faithful and intelligent administration of office after opportunity shall have been given him to be heard on written charges. Such superintendent shall select and purchase all necessary articles for use or consumption, including proper medical supplies for such hospital, where they can best and most cheaply be procured; and he shall also administer and cause to be administered all proper medical treatment and care of all persons admitted as inebriates therein; Provided also, That such superintendent shall have such assistants, to be employed by him, as he and said board may deem necessary in the proper medical treatment of all patients and the proper management of said hospital; the compensation for such assistants to be fixed by said superintendent subject to the approval of the board of trustees.

Such superintendent shall, after his appointment, be the secretary of the board of trustees and shall keep or cause to be accurately kept the time and accounts of all employes, accounts of all purchases for or on account of said institution, the amount of money expended in payment of salaries of officers or services of employes, for articles of use and consumption and medical supplies of said hospital, in proper books and pay rolls, which shall be prescribed by said board.

Said superintendent shall account monthly to the trustees, who without delay shall examine his accounts and endorse upon the proper pages

of his account books their approval or disapproval, and the record of the proceedings of said board shall show such examination and the result thereof. All supplies for said institution shall be purchased according to laws governing the purchase of supplies in other State institutions.

Through the superintendent the treasurer of said board shall pay monthly the salaries and wages of all officers and employes of said institution other than the trustees and treasurer, and shall pay all other bills and accounts approved by said board, taking proper vouchers for all payments made.

Annually on the 31st of October the superintendent shall make to said board a detailed report of all his acts, and of all the receipts and expenses of said institution, and all changes made therein during the preceding year, and such other matters as the board may require; and he shall also make such recommendations and suggestions as to him may seem proper, and such annual report of such superintendent shall be set forth in the annual report of the board of trustees.

Said superintendent shall receive an annual salary to be agreed upon by said board and approved by the Governor, not to exceed the sum of three thousand dollars, in quarterly payments out of the general fund provided for such institution.

Said superintendent shall, before entering upon his duties as such, give bond to the State of Indiana in such sum as the board of trustees shall require, to be approved by the secretary of state, conditioned for the faithful performance of his duties.

SECTION 14. The superintendent of this institution shall once a month report to the secretary thereof the fact of the admission of any patient therein, his name, age and residence, whether admitted under a contract or by order of a judge as provided in this act, the amount of money received; and if admitted under contract, the names and residence of sureties, if any; the name and residence of all discharged or paroled patients, the time when paroled or finally discharged, and whether discharged as cured from such institution: also the length of time such patient received care and medical treatment therein, and such secretary shall duly make a record thereof in a book or books which shall be kept for such purpose only.

SECTION 15. All persons who shall be admitted into this institution by order of the circuit or presiding judge as provided in this act may be discharged therefrom as cured, or may be paroled under the rules and regulations for such purpose, which shall be provided and adopted by the superintendent and the board of trustees.

SECTION 16. No person shall be appointed or employed in any office or place in said institution by said board or said superintendent because of the political views or affiliations of the appointee or employe, or for any other reason than capacity and fitness for the particular duty to be performed by such appointee or employe.

The superintendent may at any time remove and exclude any employe appointed by him, but only for cause, which removal and the cause

thereof he shall report in writing to said board at its next monthly meeting. No person shall be removed from any office or place in said institution by said board or by said superintendent because of such person's political views or affiliations, and no applicant for any office or place shall be rejected by said board or by said superintendent because of the political views or affiliations of the applicant.

SECTION 17. In event of the death of any inmate who shall have been admitted to the hospital as herein provided, it shall be the duty of the superintendent to immediately notify the relatives or immediate friends if known, and in the event such relatives or friends shall within a reasonable time fail, neglect or refuse to take the necessary steps to inter such body, and said decedent has left no estate out of which the expenses of such interment could readily be made, said body shall be disposed of as provided by the law governing such cases.

SECTION 18. Any person consigned to the care of this institution by the order of any court having jurisdiction under this law may, after the lapse of the minimum time of confinement in said hospital, and at the discretion of said superintendent and board of trustees, be released on parol pending good behavior; and during the continuance of said parol he shall report to the judge of the court every three months by presenting himself before the judge either sitting in open court or in a private session for such purpose, and during the time that the paroled one has remained free from the indulgence in intoxicating drinks or any of the narcotic drugs herein mentioned the court may grant a continuance of the parol.

After two years have elapsed from the time of the beginning of the parole and the court is satisfied from the evidence presented to him that there has been no relapse into the former or other form of inebriety or drug habit, the said court may at his discretion certify the fact through the clerk of the court to the superintendent, who shall forthwith discharge said inmate from the institution.

However, if during the continuance of the parole heretofore spoken of, the one out on parole shall be taken before any court and convicted of the crime of intoxication or the habitual use of any of the narcotic drugs heretofore mentioned, he shall be forthwith returned to the hospital without further trial, and shall become an inmate of the institution on the same standing and subject to the same rules and regulations as before. It shall further be that upon being again returned to the institution, having been for the third time convicted in the courts of inebriety, said person shall forfeit his right to parole until the expiration of two full years from the time of his last return to the hospital; and further, if after being again released he shall resume his old habits or become addicted to some other form of inebriety or drug habit he shall be declared by the court to be a hopeless victim and shall be forthwith returned to the institution, there to be kept during his natural life in the same manner as the hopeless insane.

As far as possible employment shall be furnished the inmates of this

hospital, to the end that they may aid in their own support and compensate the State for their support.

SECTION 19. There may be levied upon the taxable property of the State and placed on the general tax duplicate a levy of ——— on the hundred dollars assessed value, which amount shall be collected at the same time and in the same manner as other State taxes, and shall be set apart for and shall constitute a separate State fund for the support and maintenance of said institution. Said fund shall be handled in the same manner and expended under the same general rules as apply to funds set apart for the support of other State asylums.

SECTION 20. All existing laws in so far as they conflict with this act are hereby repealed.

SECTION 21. Whereas an emergency exists for the immediate taking effect of this act, the same shall be in full force and effect from and after its passage.

B. ELIZABETH MALONE.
GEO. R. GREEN.
Committee on Inebriety.

REPORT OF COMMITTEE ON NECROLOGY.

BY G. W. H. KEMPER, CHAIRMAN.

The following named counties reported that no deaths had occurred:

Boone, Cass, Clark, Clinton, Daviess, Delaware, Elkhart, Fayette, Hamilton, Hancock, Henry, Huntington, Jay, Jefferson, Jennings, Knox, Kosciusko, Lagrange, Laporte, Madison, Martin, Miami, Monroe, Noble, Orange, Owen, Posey, Putnam, Randolph, St. Joseph, Scott, Steuben, Sullivan, Tippecanoe, Wabash, Warren, Warrick and Wells.

The uncertainty of human life is illustrated in one instance. On April 6th Dr. Dumont Garey, secretary of the Floyd County Medical Society, writes me that no death has occurred. On July 17th Dr. E. P. Easley writes me that Dr. Garey himself died July 7th.

The following named counties reported deaths:

Allen, Dr. Charles S. Williams.
Bartholomew, Dr. John S. Arwine.
Blackford, Dr. Charles R. Mason.
Floyd, Dr. Dumont Garey.
Fountain, Dr. John W. Mock.
Grant, Dr. William C. Barns and Dr. Lewis Williams.
Hendricks, Dr. Tighlman Hunt.
Howard, Aaron J. Bates.
Jackson, Dr. Hiram A. Cummings.
Porter, Dr. Edwin F. Yohn.
Rush, Dr. Lucius R. Hudleson.
Tipton, Dr. N. W. Doan and Dr. David P. Rubush.
Vigo, Dr. John R. Crapo.
Wayne, Dr. William O'N. Mendenhall.

CHARLES SMITH WILLIAMS, M. D.

MEMBER OF THE FORT WAYNE MEDICAL SOCIETY (THE MEDICAL SOCIETY OF ALLEN COUNTY).

BORN IN NEW YORK CITY, NEW YORK, JULY 14, 1842.

DIED AT COLUMBIA CITY, WHITLEY COUNTY, INDIANA, JULY 10, 1905.

AGED 63 YEARS.

Dr. Williams received his early education in New York city. He practiced at Columbia City, Ind.

Dr. Williams took an active part in politics, being a life-long Democrat. He was elected coroner of Whitley county in 1882 and served until 1895; was re-elected and served until the time of his death, 1905. He also served as secretary of Board of Health for Whitley county for a number of years.

The doctor was a member of the First Presbyterian Church and an active worker in the Knights of Pythias Lodge.

He was married to Lydia J. Schuyler Baker December 15, 1873.

The doctor died at Columbia City, Ind., after a long sickness from Bright's disease and carcinoma of the duodenum and pancreas. At the time of his death he was an active member of the Fort Wayne Medical Society and the Indiana State Medical Association. The widow, one daughter, Mrs. Ervin Brown, and one step-daughter, Dr. Alice B. Williams, survive him.

(Prepared by Dr. Alice B. Williams, Columbia City, Ind.)

CHARLES R. MASON, M. D.

MEMBER OF THE BLACKFORD COUNTY MEDICAL SOCIETY.

BORN IN WELLS COUNTY, INDIANA, JANUARY 12, 1846.

DIED AT HARTFORD CITY, INDIANA, MARCH 8, 1906.

AGED 60 YEARS.

Dr. Mason lived and worked on a farm until his twentieth year, and then went as far west as Denver, Colo., driving an ox team. He soon returned to Indiana and decided to enter the medical profession, commencing his preliminary studies in Liber College. He graduated from the Cincinnati College of Medicine and Surgery in 1870 and at once began to practice at Warren, Ind. He removed to Hartford City in 1871 and there continued to practice until the date of his death.

In 1870 he married Miss Sarah L. Morrison, who died in 1905.

Dr. Mason did not affiliate with any church. He belonged to the Elks, the I. O. O. F. and the Masonic orders.

He was respected in his community.

He was found dead in his office, and an autopsy showed that he died from cerebral hemorrhage.

(Prepared by Dr. M. M. Clapper, Hartford City, Ind.)

JOHN S. ARWINE, M. D.

MEMBER OF BARTHOLOMEW COUNTY MEDICAL SOCIETY.

BORN IN EAST TENNESSEE, JANUARY 4, 1824.

DIED AT COLUMBUS, INDIANA, DECEMBER 2, 1905.

AGED 82 YEARS.

Dr. John S. Arwine was born January 4, 1824, in East Tennessee, being the oldest of thirteen children. At the age of eleven years he accompanied his parents to Lawrence county, Indiana, where for some years he followed agricultural pursuits in summer and attended subscription schools in winter. His educational privileges, while not of a high order, nevertheless were sufficient to lay the foundation of a career of great usefulness.

Dr. Arwine commenced the study of medicine in 1845 in the office of Dr. M. H. Fee, of Heltonsville, Ind. Owing to the absence of his father in the Mexican war in 1846 the doctor was obliged to forego his studies in order to look after the interests of the family during that year, but resumed his reading in 1847, and in the winter of 1849-50 attended his first course of lectures in Cincinnati, Ohio.

He began the practice of his profession in the town of Nashville, Brown county, Indiana, and during a period of eighteen years' residence in that place earned the reputation of one of the most successful medical men of Brown county. He came to Columbus, Ind., in 1868, where he soon took a leading place among the physicians of this section of the State. He served a number of years as secretary of the Bartholomew County Board of Health, and also as health officer of the city of Columbus.

Dr. Arwine was a member of the Presbyterian Church and a Knight Templar, being the last charter member of the commandery at this place.

Dr. Arwine leaves four children—Mrs. Ad Arnold, of Washington, D. C.; Dr. Ruth L. Suverkrup, of Columbus, Ind.; Dr. James T. Arwine, of Los Angeles, Cal., and Ensign John S. Arwine, U. S. navy, Mrs. Arwine having died some eight years ago.

Dr. Arwine lived a life to be emulated. He was modest and courageous, strong in his likes and dislikes, a hard worker and a hater of shams, never lacking in language to express his contempt for the boastful pretender and hypocrite, and to the end of his days a reader of scientific literature and deeply interested in medical matters.

Life is worth living. In its broader sense only those lives should be considered worth living that prove to be of universal benefit. Such was the life of Dr. John S. Arwine, a long and useful life, beautifully ending, fulfilling the promise,

"And thou shalt go to thy fathers in peace;
Thou shalt be buried in a good old age."

(Prepared by Dr. Geo. T. MacCoy, Columbus, Ind., and Dr. H. H. Kamman, Columbus.)

DUMONT GAREY, M. D.

MEMBER OF THE FLOYD COUNTY MEDICAL SOCIETY.

BORN IN MAUCKPORT, INDIANA, MAY 12, 1855.

DIED AT NEW ALBANY, INDIANA, JULY 7, 1906.

AGED 51 YEARS.

Dr. Garey graduated from the University of Louisville in 1889 and located at once in New Albany, where he practiced until his death.

During the seventeen years of his practice here he made many friends and secured a large clientele. He was especially kind to the poor. He was untiring in his obligations to the sick, and no ordinary hindrances deterred him from duty.

As a member of his county society he was regular in attendance, and did with alacrity his share of the work incident to such an organization. In public affairs he advocated whatever made for the commonweal.

He was a member of the Presbyterian Church, a thirty-second degree Mason, a Knight Templar and a Knight of Pythias. He was always genial, hopeful, cheerful and optimistic.

His widow, formerly Miss Alice Bell, survives him. No children were born to them.

(Prepared by Dr. E. P. Easley, New Albany, Ind.)

JOHN WESLEY MOCK, M. D.

MEMBER OF THE FOUNTAIN COUNTY MEDICAL SOCIETY.

BORN IN MIDDLETOWN, MARYLAND, DECEMBER 20, 1835.

DIED AT COVINGTON, INDIANA, SEPTEMBER 26, 1905.

AGED 70 YEARS.

His preliminary education was received at and near the place of his birth. He read medicine with Dr. Machett at Greenville, Ohio, and attended and graduated at the Medical College of Ohio in March, 1863. He located and practiced medicine at Waverly, Ind., after remaining as physician one year in the Longview Hospital, Cincinnati.

After practicing medicine a short time he was commissioned assistant surgeon of the Eleventh Ohio Vol. Inf., and remained in the service about fifteen months. October 17, 1867, he married Miss Lydia McClure, of Waverly, who still lives as his widow. He left no children, two having died in early childhood.

He was a Mason and Knight Templar, and a member of the M. E. Church.

Soon after the close of the civil war he located in this city, where he resided until his death, and continued to give his full time and attention to the practice of medicine.

He became a member of the Fountain County Medical Society in 1876, which was continued without interruption for twenty-nine years, until the time of his death. He was elected president of the society for many years.

Dr. Mock was a learned and scientific physician in every sense of the word, and was always industrious in keeping in close touch with the numerous rapid advances in the medical sciences. He was a great reader during his whole medical career. He was a very popular physician, surgeon and also obstetrician. He was an all-round good physician, and the people loved him with marked confidence wherever he was known.

Later in life he became fondly attached to his microscope and its study, with its numerous and wonderful revelations. He delighted to meet and converse with medical men on any and all medical subjects. Death was due to Bright's disease.

(Prepared by Dr. George Rowland, Covington, Ind.)

LEWIS WILLIAMS, M. D.

MEMBER OF THE GRANT COUNTY MEDICAL SOCIETY.

BORN IN CLINTON COUNTY, OHIO, APRIL 17, 1825.

DIED AT MARION, INDIANA, MARCH 5, 1906.

AGED 81 YEARS.

Educated in the common schools and at Franklin College, Indiana. His preceptor was Wm. Lomax, M. D., Marion, Ind. Was a graduate of Miami Medical College and Ohio Medical College. Practiced in Marion, Ind., until physical infirmities compelled his withdrawal from the profession.

He was a member of the Methodist Episcopal Church.

He was twice married. His first wife, Mary Howard, to whom he was married in 1848, died in 1876. His second wife, Lydia Ellen Snorf, preceded him to the grave a few months.

He left two daughters, now grown. He left behind him an unsullied name.

(Prepared by Dr. Burnham C. Dale, Marion, Ind.)

WILLIAM C. BARNS, M. D.

MEMBER OF THE GRANT COUNTY MEDICAL SOCIETY.

BORN IN GRANT COUNTY, INDIANA, APRIL 22, 1850.

DIED AT MARION, INDIANA, JUNE 20, 1905.

AGED 55 YEARS

Dr. Barns was educated in the common schools of his county and later began the study of medicine in the office of Dr. Irvin Mier, of Grant county. He graduated from the Ohio Medical College in 1875.

He was a member of the Methodist Church and of the Masonic Order.

He was united in marriage to Miss Nancy Hullinger in 1876. A widow and two daughters survive.

He was honorable, honest and upright.

His death was sudden, expiring in his office.

(Prepared by Dr. Burnham C. Dale, Marion, Ind.)

TIGHLMAN HUNT, M. D.

MEMBER OF THE HENDRICKS COUNTY MEDICAL SOCIETY.

BORN IN FRIENDSHIP, GUILFORD COUNTY, NORTH CAROLINA, APRIL 8, 1838.

DIED AT PLAINFIELD, INDIANA, JUNE 12, 1906.

AGED 68 YEARS.

Dr. Hunt attended the common schools in his native neighborhood. In 1860 he came to Indiana and finished an academic course at Mooresville high school. He was afterwards a student in the office of Drs. Mitchell and Reagan at Mooresville. He pursued his literary studies until he acquired a very good knowledge of Latin, Greek, Sanscrit, German and French languages. He was a student at Rush Medical College 1865-6, and located at Coatesville in 1866, where he remained until 1888. In 1872 he took a degree at the Indiana Medical College and in 1879 a special course at Bellevue Medical College. In 1888 he removed to Greencastle, where he resided until 1894, when he removed to Plainfield, where he remained until his death.

Dr. Hunt was active in promoting the library interests of Plainfield, working untiringly until his hopes were realized in the erection of a commodious building well supplied with books.

He was a public-spirited citizen, honest, upright and ready for all good work.

He was an earnest, faithful member of the M. E. Church.

He was married August 9, 1866, to Amanda E. Harvey, who, together with four sons and four daughters, survives him.

He had been in gradually failing health dating from an accidental fall which caused an impacted fracture of the neck of the femur three years ago. The cause of his death was atheroma, involving important vessels in the base of the brain.

He was loved and respected by all, and his life was surely a success and an inspiration.

(Prepared by Dr. Amos Carter, Plainfield, Ind.)

AARON J. BATES, M. D.

MEMBER OF THE HOWARD COUNTY MEDICAL SOCIETY.

BORN IN HOWARD COUNTY, INDIANA, ——— —, 1843.

DIED AT KOKOMO, INDIANA, APRIL 23, 1906.

AGED 63 YEARS.

Dr. Bates was one of the oldest settlers in Howard county, being the third white child born within its limits. He was educated in the crude common schools of that period, but in later years attended the normal school at Kokomo under Professor Baldwin. The civil war coming on, many of the students enlisted Young Bates served with credit for three years in the Eighty-ninth Regiment Ind. Vol.

At the close of the war he studied medicine under Dr. I. C. John son, of Kokomo, attended Rush Medical College one term and graduated from the Indiana Medical College. After practicing his profession at Upland, Ind., for ten years Dr. Bates moved to Kokomo in 1883, where he resided until his death.

Dr. Bates was a consistent member of the Methodist Episcopal Church, a Mason and a member of the G. A. R. In the medical profession he was held in high esteem as a courteous, conscientious physician, careful and considerate in his duty to his patients and honorable toward his colaborers.

At the time of his death, although retired for several years, Dr. Bates held membership in the Kokomo Academy of Medicine, the Howard County Medical Society and the State Medical Society. He was also a member of the local pension board.

Dr. Bates was married three times—first to Ellen Wookey, second to Margaret Amsden and third to Martha Freel. The latter, together with four matured children, survives him.

The funeral was largely attended by the citizens of Kokomo, among whom were nearly all of the physicians of the county.

His death was due to pneumonia.

(Prepared by Dr. J. O. Garr, Kokomo, Ind.)

HIRAM A. CUMMINGS, M. D.

MEMBER OF THE JACKSON COUNTY MEDICAL SOCIETY.

BORN IN LAWRENCE COUNTY, INDIANA, JUNE 10, 1857.

DIED AT CLEAR SPRING, INDIANA, APRIL 20, 1905.

AGED 47 YEARS.

He was the youngest of eight children born to Joseph and Malinda (Faubian) Cummings, sturdy pioneers of southern Indiana, and received his early education in the country schools of the neighborhood of his home. At the age of nineteen he began the study of medicine under the instruction of his brother, Dr. David J. Cummings, then at Houston, Jackson county, Indiana, until he entered the Miami Medical College, attending the years 1880 and 1881, since which time he practiced at Clear Spring up to within the last few months, when the inroads of disease implanted on a rather frail body compelled him to seek repose. In early life he joined the Christian Church, and the gospel of Christ was the comfort of his last days. He was a master and Royal Arch Mason, and one of the most faithful members of the Jackson County Medical Society, rarely missing a meeting.

On July 1, 1880, he was married to Miss Mary Foster. To this union five children were born, two of whom preceded their father in early life. Three sons, Spencer, Walter and Lloyd, together with the widow, survive to mourn his death.

Dr. Cummings was a part of that great army of physicians known as the general practitioner in the country, far from assistance, with the contents of his pocket case for his reliance. He battled successfully with disease, to which the confidence in which he was held and the large practice which he enjoyed bears testimony.

Death was due to organic disease of the heart.

(Prepared by A. G. Osterman, M. D., Dudleytown, Ind.)

EDWIN F. YOHN, M. D.

MEMBER OF THE PORTER COUNTY MEDICAL SOCIETY.

BORN IN LOGAN COUNTY, OHIO, ——— —, 1863.

DIED AT VALPARAISO, INDIANA, FEBRUARY 4, 1906.

AGED 43 YEARS.

Dr. Yohn was educated at the schools of Valparaiso and graduated in medicine from the University of Louisville, Ky., in 1894.

He first practiced at Hebron and then removed to Valparaiso, where he continued to reside until his death.

He left a widow, formerly Miss Mary E. Sheffield, and a young daughter.

He was a member of the Masonic order. He was loved and respected by those who knew him.

He died from the effects of blood poisoning contracted while in the performance of his professional duties.

(Prepared by Dr. H. M. Evans, Valparaiso, Ind.)

LUCIUS R. HUDLESON, M. D.

MEMBER OF THE RUSH COUNTY MEDICAL SOCIETY.

BORN IN PRINCETON, INDIANA, APRIL 8, 1861.

DIED AT MILROY, INDIANA, DECEMBER 6, 1905.

AGED 44 YEARS.

After completing the public school course he attended the Indiana State Normal and then taught in the public schools. He attended the College of Physicians and Surgeons at Baltimore one year, then entered Jefferson Medical College at Philadelphia, from which he graduated in 1896. After practicing for a short time with his preceptor, Dr. W. W. Blair, at Princeton, he went to Richland, Rush county, Indiana, to practice. After a few years he moved a short distance to Milroy, but continued to hold his practice at Richland.

He belonged to the K. of P. lodge and was an active member of the United Presbyterian Church. He was a very capable and conscientious physician, ever sober, clean, honorable and just in his dealings with his fellow men. He was a faithful and active worker in the county medical society.

On the 28th of December, 1904, he was united in marriage to Miss Maud Ellis, of Newcastle, Ind., who survives him.

(Prepared by Dr. W. S. Coleman, Rushville, Ind.)

N. W. DOAN, M. D.

MEMBER OF THE TIPTON COUNTY MEDICAL SOCIETY.

BORN IN KNOX COUNTY, OHIO, MAY 4, 1829.

DIED AT CURTISVILLE, INDIANA, JULY 2, 1905.

AGED 76 YEARS.

Dr. Doan was a leading physician in Tipton county for thirty-five years, and had always at heart the best interests of his chosen profession.

He was united in marriage November 16, 1851, to Miss Elizabeth Shinn, and nine children were born to this union, six of whom still survive.

He was loved and respected.

(Prepared by Drs. Newcomer, Dickey and Gifford, Tipton, Ind.)

DAVID PAUL RUBUSH, M. D.

MEMBER OF THE TIPTON COUNTY MEDICAL SOCIETY.

BORN IN ROCKINGHAM COUNTY, VIRGINIA, FEBRUARY 25, 1847.

DIED AT SHARPSVILLE, INDIANA, FEBRUARY 20, 1904.

AGED 56 YEARS.

When quite young his father, who was a noted circuit rider, removed to East Tennessee, where the subject of this sketch grew up to young manhood, imbibing the spirit of freedom which is so characteristic of that southern mountainous country.

At the age of 16 he left Tennessee and came to Indiana, where he enlisted in the service of his country and was assigned to the Twenty-fifth Independent Battery, Light Artillery, where he served with credit till the close of the civil war, receiving an honorable discharge.

After the war he attended school at Laurel Academy, Tennessee, and Hartsville College, at Hartsville, Ind., where he prepared himself for the ministry, serving the United Brethren Church in this capacity one year in Tennessee, two years in Ohio near Cincinnati and one year on Blue River Circuit in Shelby county, Indiana.

He studied medicine under Dr. Samuel McGaughey, Sr., of Acton, and graduated from the Indiana Medical College in 1875.

He began the practice of medicine at Jacksons, Tipton county, where he remained three years, removing to Tetersburg, and from thence to Sharpsville, where he enjoyed a good practice and the esteem of his fellow men until his death.

After removing to Tipton county he entered the ministry of the Evangelical Lutheran Church and continued to occupy the pulpit regularly for many years and occasionally until near the close of his eventful life.

He was endowed with a fine sense of honor and was a man of high professional attainments, extensive reading and great literary ability.

Dr. Rubush was a member of the Tipton County Society and State Medical Association, and of the Pat Evans Post, G. A. R. He was also for many years a member of the Board of Pension Examiners at Tipton, Ind.

On March 21, 1869, he was united in marriage to Rachel Pouder, with whom he lived a devoted Christian life for nearly thirty-five years. Of this union five children, together with the widow, survive.

Dr. Rubush possessed a genial disposition, optimistic, always saw the bright side of life, and his untimely death leaves a place that will be difficult to fill. His death was due to cerebral hemorrhage.

(Prepared by Dr. W. C. Furney, Sharpsville, Ind.)

JOHN REUBEN CRAPO, M. D.

MEMBER OF THE VIGO COUNTY MEDICAL SOCIETY.

BORN IN SULLIVAN COUNTY, INDIANA, OCTOBER 3, 1850.

DIED AT TERRE HAUTE, INDIANA, DECEMBER 19, 1905.

AGED 55 YEARS.

Dr. Crapo was educated in the public schools of Terre Haute. His preceptor was Dr. John E. Link, of Terre Haute. He graduated from the Medical College of Ohio in 1877.

He was a busy and successful practitioner of medicine and a man of keen business judgment.

He was for many years secretary of the Vigo County Board of Health and at one time a member of the City Health Board.

He was a member of the following medical societies: Vigo County, Indiana State Medical, American Medical Association and the Aesculapian.

He was a member of the Congregational Church, also of the Masonic Order and the Royal Arcanum Society. His social standing was of a high order.

He was twice married, and one child survives the first marriage. As a result of his second marriage to Katheryn A. Fischer, of this city, he leaves a widow and three sons.

He suffered in silence for more than ten years from diabetes mellitus, and finally albuminuria and gangrene resulted. Amputation of the affected limb was vainly attempted to arrest the complicating disease, but without avail. He worked up to the last few weeks before his death and directed much of the treatment for his afflictions.

(Prepared by Dr. T. C. Stunkard, Terre Haute, Ind.)

WILLIAM O'NEAL MENDENHALL, M. D.

MEMBER OF THE WAYNE COUNTY MEDICAL SOCIETY.

BORN IN MONTGOMERY COUNTY, INDIANA, APRIL 28, 1834.

DIED AT RICHMOND, INDIANA, JULY 16, 1905.

AGED 71 YEARS.

He graduated from Rush Medical College, Chicago, in 1870. He practiced medicine in Richmond, Ind., for about twenty-three years. He was a member of the Wayne County Medical Society and was held in high esteem by all his professional associates. He was a member of the South Eighth-Street Friends Church of Richmond, Ind., and was also a member of the National Union Benevolent Society.

In 1859 he was married to Lydia J. Hayworth.

He died with a disease of a cancerous nature. He leaves a widow and three children, Dr. Edwin H. and William O., and Mrs. Georgia M. Garver.

(Prepared by Dr. David W. Stevenson, Richmond, Ind.)

PRESIDENTS AND VICE-PRESIDENTS

OF THE

INDIANA STATE MEDICAL SOCIETY

SINCE ITS ORGANIZATION.

PRESIDENTS.

Names.	*Residence.*	*Elected.*	*Served.*
*L. H. DUNLAP	Indianapolis	1849	1849
*W. T. S. CORNETT	Versailles	1849	1850
*A. CLAPP	New Albany	1850	1851
*GEO. W. MEARS	Indianapolis	1851	1852
*J. H. BROWNE	Lawrenceburg	1852	1853
*E. DEMING	Lafayette	1853	1854
*MADISON J. BRAY	Evansville	1854	1855
*WILLIAM LOMAX	Marion	1855	1856
*DANIEL MEEKER	Laporte	1856	1857
*T. BULLARD	Indianapolis	1857	1858
*NATHAN JOHNSON	Cambridge City	1858	1859
*DAVID HUTCHINSON	Mooresville	1859	1860
*B. S. WOODWORTH	Fort Wayne	1860	1861
*THEOPHILUS PARVIN	Indianapolis	1861	1862
*J. F. HIBBERD	Richmond	1862	1863
*JOHN SLOAN	New Albany	1863	1864
*S. M. LINTON	Columbus	1864	1864
*JOHN MOFFETT (acting president)	Rushville	1864	1864
*M. H. HARDING	Lawrenceburg	1865	1865
*W. LOCKHART (acting president)	Danville	1865	1866
*VEIRLING KERSEY	Richmond	1866	1867
*J. S. BOBBS	Indianapolis	1867	1868
*NATHANIEL FIELD	Jeffersonville	1868	1869
*GEO. SUTTON	Aurora	1869	1870
*R. N. TODD	Indianapolis	1870	1871
*H. P. AYRES	Fort Wayne	1871	1872
*JOEL PENNINGTON	Milton	1872	1873
*ISAAC CASSELBERRY	Evansville	1873	1874

*Deceased.

Names.	*Residence.*	*Elected.*	*Served.*
*W. Hobbs	Knightstown	1873	1874
R. E. Haughton	Richmond	1874	1875
*J. H. Helm	Peru	1875	1876
*S. S. Boyd	Dublin	1876	1877
L. D. Waterman	Indianapolis	1877	1878
L. Humphreys	South Bend	1878	1879
*J. R. Weist	Richmond	1879	1879
*Benj. B. Newland (acting president)	Bedford	1879	1880
*Thomas B. Harvey	Indianapolis	1880	1881
*Marshall Sexton	Rushville	1881	1882
Wm. H. Bell	Logansport	1882	1883
*S. E. Munford	Princeton	1883	1884
*J. H. Woodburn	Indianapolis	1884	1885
*J. S. Gregg	Fort Wayne	1885	1886
G. W. H. Kemper	Muncie	1886	1887
*H. Charlton	Seymour	1887	1887
W. H. Wishard	Indianapolis	1888	1889
J. D. Gatch	Lawrenceburg	1889	1890
*G. C. Smythe	Greencastle	1890	1891
Edwin Walker	Evansville	1891	1892
G. F. Beasley	Lafayette	1893	1894
C. A. Daugherty	South Bend	1893	1894
*E. S. Elder	Indianapolis	1894	1894
C. S. Bond (acting president)	Richmond	1894	1895
Miles F. Porter	Fort Wayne	1895	1896
J. H. Ford	Wabash	1896	1897
W. N. Wishard	Indianapolis	1897	1898
J. C. Sexton	Rushville	1898	1899
Walker Schell	Terre Haute	1899	1900
Geo. W. McCaskey	Fort Wayne	1900	1901
A. W. Brayton	Indianapolis	1901	1902
J. B. Berteling	South Bend	1902	1903
Jonas Stewart	Anderson	1903	1904
Geo. T. McCoy	Columbus	1904	1905
Geo. H. Grant	Richmond	1905	1906
Geo. J. Cook	Indianapolis	1906	

VICE-PRESIDENTS.

Names.	*Residence.*	*Elected.*	*Served.*
*N. Johnson (temporary)	Cambridge City	1849	1849
*L. Ryan (temporary)	Anderson	1849	1849
T. W. Florer (temporary)	Alamo	1849	1849
*C. Wallace (temporary)	Indianapolis	1849	1849
*A. Clapp	New Albany	1849	1850

*Deceased.

Names.	*Residence.*	*Elected.*	*Served.*
*N. Johnson	Cambridge City	1849	1850
*L. Dunlap	Indianapolis	1849	1850
*Dr. Farquher	Wabash	1849	1850
*William Lomax	Marion	1850	1851
*R. Curran	Indianapolis	1850	1851
*William Davidson	Madison	1850	1851
*W. W. Hitt	Vincennes	1850	1851
*H. M. Dowling	New Albany	1851	1852
*S. Grimes	Delphi	1851	1852
*J. Pennington	Milton	1851	1852
*Charles Parry	Indianapolis	1851	1852
*William Byford	Evansville	1852	1853
*William Davidson	Madison	1852	1853
*V. Kersey	Milton	1852	1853
*T. Bullard	Indianapolis	1852	1853
*N. Johnson	Cambridge City	1853	1854
*James McClelland	Jeffersonville	1853	1854
*M. H. Harding	Lawrenceburg	1853	1854
*Samuel Reid	Salem	1853	1854
*O. L. Clark	Lafayette	1854	1855
*P. S. Shields	New Albany	1854	1855
*J. Pennington	Milton	1854	1855
*J. F. Mothershead	Indianapolis	1854	1855
*George Sutton	Aurora	1855	1856
*G. B. Walker	Evansville	1855	1856
*C. Bowman	New Albany	1855	1856
*D. Meeker	Laporte	1855	1856
*John Sloan	New Albany	1856	1857
*W. W. Hitt	Vincennes	1856	1857
T. W. Florer	Alamo	1856	1857
*John Moffett	Rushville	1856	1857
*T. J. Cogley	Madison	1857	1858
*D. Hutchinson	Mooresville	1857	1858
*C. West	Hagerstown	1857	1858
*W. R. Winton	Wabash	1857	1858
T. R. Austin	New Albany	1858	1859
*Benjamin Newland	Bedford	1858	1859
*S. W. Fry	Crawfordsville	1858	1859
*M. M. Latta	Goshen	1858	1859
*John Sloan	New Albany	1859	1860
*R. M. O'Ferrall	Lafayette	1859	1860
*J. S. McLellan	Jefferson City	1859	1860
R. E. Haughton	Richmond	1859	1860
J. N. Green	Stilesville	1860	1861
*Charles Fishback	Shelbyville	1860	1861

*Deceased.

Names.	*Residence.*	*Elected.*	*Served.*
L. Humphrey	South Bend	1860	1861
*Isaac Casselberry	Evansville	1860	1861
*Calvin West	Hagerstown	1861	1862
*Henry Cox	Danville	1861	1862
A. H. Robbins	Rochester	1861	1862
J. A. Skinner	Vincennes	1861	1862
*W. R. Winton	Wabash	1862	1863
*H. G. Sexton	Rushville	1862	1863
*A. Preston	Greencastle	1862	1863
*John Moffett	Rushville	1862	1863
*A. G. Preston	Greencastle	1863	1864
*John Moffett	Rushville	1863	1864
*Benjamin Newland	Bedford	1863	1864
*Calvin West	Hagerstown	1863	1864
*Wilson Lockhart	Danville	1864	1865
*T. B. Harvey	Indianapolis	1865	1866
*J. H. Woodburn	Indianapolis	1866	1867
*R. B. Jessup	Vincennes	1867	1868
*R. N. Todd	Indianapolis	1868	1869
*H. P. Ayers	Fort Wayne	1869	1870
I. M. Rosenthal	Fort Wayne	1870	1871
*J. K. Bigelow	Indianapolis	1871	1872
R. E. Haughton	Richmond	1872	1873
*Wilson Hobbs	Knightstown	1873	1874
*W. B. Lyons	Huntington	1874	1875
*F. W. Beard	Vincennes	1875	1876
E. D. Laughlin	Orleans	1876	1877
*N. P. Howard	Greenfield	1877	1878
*Benj. Newland	Bedford	1878	1879
J. D. Gatch	Lawrenceburg	1879	1880
John D. Mitchell	Terre Haute	1880	1881
F. J. Van Vorhis	Indianapolis	1881	1882
*S. H. Charlton	Seymour	1882	1883
W. H. Schultz	Lebanon	1883	1884
*J. S. Gregg	Fort Wayne	1884	1885
W. J. Hurt	Waynetown	1885	1886
*W. V. Wiles	Spencer	1886	1887
C. W. Burket	Warsaw	1887	1888
*A. G. Porter	Lebanon	1888	1889
Silas T. Yount	Lafayette	1889	1890
H. D. Wood	Angola	1890	1891
Erwin Wright	Huntington	1891	1892
C. H. Smith	Lebanon	1892	1893
T. F. Leech	Crawfordsville	1893	1894
C. S. Bond	Richmond	1894	1895

*Deceased.

Names.	*Residence.*	*Elected.*	*Served.*
E. L. LARKINS	Terre Haute	1895	1896
W. F. BATMAN	Lebanon	1896	1897
JONAS STEWART	Anderson	1897	1898
GEO. F. KEIPER	Lafayette	1898	1899
SAMUEL KENNEDY	Shelbyville	1899	1900
A. M. HAYDEN	Evansville	1900	1901
J. B. BERTELING	South Bend	1901	1902
W. H. GILBERT	Evansville	1902	1903
CHAS. A. WHITE	Danville	1903	1904
I. N. TRENT	Muncie	1903	1904
M. G. MOORE	Vincennes	1903	1904
H. J. HALL	Franklin	1904	1905
C. T. HENDERSHOT	Cannelton	1904	1905
D. J. LORING	Valparaiso	1904	1905
D. W. STEVENSON	Richmond	1905	1906
HARRY C. SHARP	Jeffersonville	1905	1906
W. R. DAVIDSON	Evansville	1905	1906
J. B. GARBER	Dunkirk	1906	
C. C. TERRY	South Bend	1906	
CHAS. CHITTICK	Frankfort	1906	

LIST OF MEMBERS

OF THE

INDIANA STATE MEDICAL ASSOCIATION

ADAMS COUNTY.

OFFICERS.

J. S. Coverdale, President.
M. F. Parrish, Vice-Pres.
Marie L. Holloway, Sec.-Treas.

CENSORS.

S. D. Beavers.
H. F. Costello.
J. M. Miller.

MEMBERS.

Aspey, H. M., Geneva.
Beavers, Seth G., Decatur.
Boyers, James S., Decatur.
Clark, C. S., Decatur.
Clark, D. D., Decatur.
Costello, H. F., Decatur.
Coverdale, Earl G., Decatur.
Coverdale, J. S., Decatur.
Holloway, Marie L., Decatur.
Keller, H. E., Decatur.
Mattax, L. L., Geneva.
Miller, James M., Decatur.
McMillen, W. W. P., Decatur.
Parrish, M. F., Monroe.
Thomas, P. B., Decatur.
Wilson, R. S., Berne.

FT. WAYNE (ALLEN COUNTY) MEDICAL SOCIETY.

OFFICERS.

M. I. Rosenthal, President.
E. A. Crull, Vice-Pres.
J. C. Wallace, Secretary.
W. P. Whery, Treasurer.
H. A. Duemling, Delegate.

CENSORS.

G. B. M. Bower.
K. K. Wheelock.
S. H. Havice.

MEMBERS.

Adams, Horace E., Harlan.
Barnett, Chas. E., Ft. Wayne.
Barnett, W. W., Ft. Wayne.
Beall, Chas. G., Ft. Wayne.
Bell, E. Edwin, Ft. Wayne.
Bolman, R. M., Ft. Wayne.
Bower, G. B. M., Ft. Wayne.
Brown, L. E., Ft. Wayne.
Brudi, G. G., New Haven.
Bruggeman, H. O., Ft. Wayne.
Buchman, A. P., Ft. Wayne.
Bulson, A. E., Jr., Ft. Wayne.
Calvin, J. Carrithers, Ft. Wayne.
Calvin, W. D., Ft. Wayne.
Carey, W. W., Ft. Wayne.
Crull, E. A., Ft. Wayne.

Culp, L. L., Ft. Wayne.
Dancer, Chas. R., Ft. Wayne.
Deming, N. L., Ft. Wayne.
De Vaux, Edw. F., Ft. Wayne.
Dinnen, Jas. M., Ft. Wayne.
Doolittle, B. U., Ft. Wayne.
Drayer, L. P., Ft. Wayne.
Duemling, H. A., Ft. Wayne.
English, C. H., Ft. Wayne.
Ensien, Wm., Ft. Wayne.
Geary, J. K., Ft. Wayne.
Gilpin, J. H., Ft. Wayne.
Gordon, C. W., Ft. Wayne.
Greenawalt, G. L., Ft. Wayne.
Gross, W. O., Ft. Wayne.
Hamilton, Allen, Ft. Wayne.
Hammond, A. K., Ft. Wayne.
Havice, S. H., Ft. Wayne.
Hetrick, J., Ft. Wayne.
Kane, Alfred, Ft. Wayne.
Kesler, A. J., Ft. Wayne.
Macbeth, A. H., Ft. Wayne.
Macbeth, Harriet S., Ft. Wayne.
McCaskey, G. W., Ft. Wayne.
McEvoy, J. B., Ft. Wayne.
McHugh, J. E., Ft. Wayne.
McKeeman, R. B., Ft. Wayne.
McOscar, E. J., Ft. Wayne.
Mentzer, S. E., Monroeville.
Mercer, J. D., Poe.
Morgan, Elmer E., Ft. Wayne.
Myers, Wm. H., Ft. Wayne.
Nierman, H. G., Ft. Wayne.
Nieschang, C. C. F., Ft. Wayne.
Null, L. S., New Haven.
Porter, Miles F., Ft. Wayne.
Proegler, Carl, Ft. Wayne.
Pulliam, J. M., Ft. Wayne.
Ranke, J. H., Ft. Wayne.
Rarick, J. E., Ft. Wayne.
Rhamy, B. W., Ft. Wayne.
Rosenthal, I. M., Ft. Wayne.
Rosenthal, M. I., Ft. Wayne.
Ross, Geo. A., Ft. Wayne.
Rothschild, Chas., Ft. Wayne.
Ruhl, Wm. D., Ft. Wayne.
Schick, M. F., Ft. Wayne.
Schilling, Carl, Ft. Wayne.
Schilling, Jno., Ft. Wayne.
Schneider A. L., Ft. Wayne.
Sledd, S. D., Ft. Wayne.
Smith, Guy A., Ft. Wayne.
Stemen, C. B., Ft Wayne.
Stemen, G. B., Ft. Wayne.
Stemen, W. E., Ft. Wayne.
Stultz, J. E., Ft. Wayne.
Sweringer H. V., Ft. Wayne.
Van Buskirk, E. M., Ft. Wayne.
Van Sweringen, Budd, Ft. Wayne.
Van Sweringen, Garrette, Ft. Wayne
Wallace, J. Clifford, Ft. Wayne.
Weaver, B. P., Ft. Wayne.
Wheelock, K. K., Ft. Wayne.
Whery, Mary A., Ft. Wayne.
Whery, Wm. P., Ft. Wayne.
White, R. P., Ft. Wayne.
Williams, Alice B., Columbia City.
Williams, Ch. S.,* Columbia City.
Wybourn, D. C., Sheldon.

*Deceased.

HONORARY.

Beavers, S. D., Decatur.
Boyers, J. S., Decatur.
Wilking, S. V., Roanoke.

SUSPENDED.

Griebel, Herman A., Ft. Wayne.

REMOVED.

Price, C. R., Monroeville.

BARTHOLOMEW COUNTY.

OFFICERS.

F. D. Norton, President.
D. J. Marshall, Vice-Pres.
H. H. Kamman, Sec.-Treas.
J. L. Morris, Delegate.

CENSORS.

S. M. Voris.
R. E. Holder.
A. P. Roope.

MEMBERS.

Arwine, John S.,* Columbus.
Armbruster, B. F., Columbus.
Banker, A. J., Columbus.
Banker, W. T., Columbus.
Benham, J. W., Columbus.
Butler, Wm. H., Columbus.
Clouse, Bertha A., Hope.
Cosby, Geo. O., Elizabethtown (R. F. D. 18.)
De Long, O. A., Azalia.
Elrod, M. N., Columbus.
Fitzpatrick, B., Columbus.
Francis, E. T., Columbus.
Hawes, James K., Columbus.
Holder, R. E., Columbus.
Kamman, H. H., Columbus.
Kirkpatrick, A. M., Columbus.
McCoy, Geo. T., Columbus.
Marshall, D. J., Columbus.
Mennet, O. H., Columbus.
Morris, John Little, Columbus.
Norton, F. D., Columbus, R. F. D.
Norton, Wm. J., Hope.
Regennas, E. G., Hope.
Reynolds, G. E., Columbus.
Roope, A. P., Columbus.
Suverkrup, Lotta R. A., Columbus.
Voris, S. M., Columbus.
Wisner, W. E., Columbus.
Wood, E. U., Columbus.

* Deceased.

BLACKFORD COUNTY.

OFFICERS.

C. R. Mason, President.
H. C. Davisson, Vice-Pres.
M. M. Clapper, Sec.-Treas.
M. M. Clapper, Delegate.

MEMBERS.

Clapper, Manton M., Hartford City.
Corey, Chas. W., Hartford City.
Davisson, Henry C., Hartford City.
Hollis, Ella A., Hartford City.
Hollis, Samuel, Hartford City.
Hollis, William A., Hartford City.
Lorimore, J. H. C., Hartford City.
Reynolds, Francis M., Montpelier.
Scott, E. K., Hartford City.
Sellers, Ch. A., Montpelier.
Sellers, John, Montpelier.
Taylor, J. A., Montpelier.
Templin, T. B., Hartford City.
Thornton, Walter E., Montpelier.

SUSPENDED.

Landon, Lewis C., Priam.
Maddox, Leander E., Montpelier.
Mason, Charles R.,* Hartford City.
Shull, Charles Q., Montpelier.

* Deceased.

BOONE COUNTY.

OFFICERS.

G. Schultz, Pres.
De L. Smith, Vice-Pres.
W. H. Williams, Secretary.
J. S. Reagan, Treasurer.
A. P. Fitch, Delegate.

CENSORS.

C. D. Umberhine.
W. H. Schultz.
C. H. Smith.

MEMBERS.

Ball, J. R., Lebanon.
Bounell, T. A., Jamestown.
Brendel, John F., Zionsville.
Brent, I. N., Jamestown.
Engleman, L. P., Reese Mills.
Fitch, A. P., Lebanon.
Hardy, J. S., Lebanon.
Hurt, G. K., Thorntown.
Johns, Elmer D., Zionsville.
Jones, A. B., Lebanon.
Lee, D. F., Zionsville.
Little, P. B., Whitestown.
Masters, Luella M., Thorntown.
Reagan, J. S., Lebanon.
Roark, B. H., Jamestown.
Schultz, Guy A., Lebanon.
Schultz, W. H., Lebanon.
Shields, J. S., Elizaville.
Smith, C. H., Lebanon.
Smith, De L., Lebanon.
Umberhine, C. D., Reese Mills.
Van Nuys, Mary M., Lebanon.
Williams, W. H., Lebanon.

CARROLL COUNTY.

OFFICERS.

C. E. Scholl, President.
J. J. Shultz, Vice-Pres.
H. Y. Mullin, Sec.-Treas.
P. W. Conway, Delegate.

CENSORS.

C. M. Kennedy.
A. C. Clauser.
F. H. Robinson.
H. Y. Mullin.

MEMBERS.

Alexander, W. P., Camden.
Buck, G. M., Burrows.
Camp, C. E., Camden.
Carney, C. E., Delphi.
Carter, H. Bringhurst.
Chittick, A. J., Burlington.
Clauser, A. C., Delphi.
Conway, P. W., Ockley.
Crampton, Chas. C., Delphi.
Egan, B. W., Carroll.
Galbreath, W. H., Rockfield.
Hickman, C. C., Yeoman.
Kennedy, C. M., Camden.
Lyon, F. P., Flora.
McNeal, G. R., Deer Creek.
Mullin, H. Y., Rockfield.
Peter, E. L., Flora.
Quick, W. R., Delphi.
Robinson, F. H., Delphi.
Scholl, C. E., Camden.
Sharrer, W. F., Delphi.
Shirar, L., Flora.
Shultz, J. J., Delphi.
Snyder, B. F., Camden.
Trobaugh, W. A., Cutler.
Wagoner, E. D., Burrows.
Walker, E., Delphi.

SUSPENDED.

Angell, Chas. E., Delphi.

CASS COUNTY.

OFFICERS.

J. L. Gilbert, President.
G. E. Huffman, Vice-Pres.
Geo. D. Miller, Sec.-Treas.
G. D. Miller, Delegate.

CENSORS.

J. Z. Powell.
R. E. Troutman.
John P. Hetherington.

MEMBERS.

Barnfield, J. H., Logansport.
Bartholomew, A. C., Logansport.
Bradfield, John, Logansport.
Busjahn, F. A., Logansport.
Cady, N. W., Logansport.
Cornell, F., Galveston.
Gilbert, J. L., Logansport.
Hall, Joseph, Logansport.
Hallanan, Joseph, Logansport.
Herrmann, A. J., Logansport.
Herrmann, F. J., Logansport.
Hessler, Robert, Logansport.
Hetherington, J. P., Logansport.
Hill, Henry B., Logansport.
Holloway, W. A., Logansport.
Huffman, G. E., Long Cliff.
Little, John A., Logansport.
Lybrook, Wm. E., Young America.
McCully, Charles H., Logansport.
Marshall, Geo. D., Young America.
Mayfield, Marcellus, Royal Center.
Miller, Geo. D., Logansport.
Miller, H. H., Galveston.
Palmer, Adlebert L., Logansport.
Parrish, Rebecca, Long Cliff.
Powell, Jehu Z., Logansport.
Reed J. H. Logansport.
Rogers, Joseph G., Long Cliff.
Rubsam, Joseph, Logansport.
Shultz, J. B., Logansport.
Stevens, B. C., Logansport.
Stewart, J. W., Logansport.
Terflinger, T. W., Long Cliff.
Thomas, Charles L., Logansport.
Troutman, R. E., Logansport.
Tucker, Arthur W., Logansport.
Zinninger, Henry A., Lucerne.

HONORARY.

Bell, Wm. H., Logansport.

REMOVED.

Elder, Edward C., Logansport.
Snyder, A. J., Miles.

CLARK COUNTY.

OFFICERS.

Cadwalader Jones, President.
C. C. Crum, Vice-Pres.
W. M. Varble, Sec.-Treas.
C. Jones, Delegate.

CENSORS.

H. C. Sharp.
Wm. H. Sheets.
I. H. Ruddell.

MEMBERS.

Cohen, David, Jeffersonville.
Coombs, David, Charlestown.
Crum, Claude C., Jeffersonville.
Elrod, E. L., Henryville.
Flynn, Edw. N., Jeffersonville.
Graham, Oliver P., Jeffersonville.
Hancock, C. F. C., Jeffersonville.
Hobday, W. A., Ohio Falls.
Jones, Cadwalader, Charlestown.
McBride, Isaac, Jeffersonville.
Peyton, David C., Jeffersonville.
Reynolds, Jas. M., Memphis.
Ruddell, I. N., Jeffersonville.
Samuels, W. L., Winnemucca, Nev.
Sharp Harry C., Jeffersonville.
Sheets, Wm. H., Jeffersonville.
Stalker, Bodine, Borden.
Stockwell, John, Charlestown.
Twomey, G. W., Jeffersonville.
Varble, W. M., Jeffersonville.
Walker, Jas. H., Henryville.

SUSPENDED.

Field, D. L., Jeffersonville.
Zuerner, Joseph, Jeffersonville.

CLAY COUNTY.

OFFICERS.

Jacob P. Smith, President.
W. H. Orr, Vice-Pres.
Geo. W. Finley, Sec.-Treas.
G. M. Pell, Delegate.

CENSORS.

Junius L. Lambert.
James A. Rawley.
F. Nussell.

MEMBERS.

Black, Silas D., Brazil.
Dilly, Fred C., Brazil.
Finch, Gilbert R., Center Point.
Finley, George W., Brazil.
Gregg, Joseph W., Brazil.
Hawkins, Robert W., Brazil.
Hollingsworth, S. G., Brazil.
James, Oliver, Cory.
Lambert, Junius L., Brazil.
Lewis, George F., Asheville.
Nussell, Fred, Brazil.
Orr, Wm. H., Brazil.
Pell, Geo. M., Carbon.
Pierce, Harold J., Cloverland.
Rawley, James A., Brazil.
Smith, Jacob F., Brazil.
Sourwine, John D., Brazil.
Veach, Patrick H., Staunton.
Williams, Lewis L., Brazil.
Young, M. H., Harmony.

REMOVED.

Gifford, Joseph C., Brazil.
Miller, Daniel B., Brazil.
Pollom, Reginald, Asheville.

SUSPENDED.

Howes, James A., Bowling Green.

CLINTON COUNTY.

OFFICERS.

S. B. Sims, President.
W. J. Fernald, Vice-Pres.
Chas. Chittick, Sec.-Treas.

CENSORS.

W. H. Curtiss.
J. E. Robison.
W. J. Fernald.

MEMBERS.

Alexander, W., Frankfort.
Boulden, M. F., Frankfort.
Chittick, Chas., Frankfort.
Curtiss, W. H., Frankfort.
Fernald, W. J., Frankfort.
Hadley, Jas. W., Rossville.
Lambert, I. C., Colfax.
McCarty, M. T., Frankfort.
Robison, J. E., Geetingsville.
Sims, S. B., Frankfort.
Zinn, Charles, Michigantown.

SUSPENDED.

Hatfield, J. F., Moran.

CRAWFORD COUNTY.

OFFICERS.

F. R. Gobbel, President.
L. E. Grant, Vice-Pres.
G. H. Abell, Sec.-Treas.

CENSORS.

G. B. Hammond.
J. Myers.
J. J. Johnson.

MEMBERS.

Abell, G. H., Sulphur.
Bushaw, B. E.,* Marengo.
Gobbel, F. R., English.
Grant, L. E., Marengo.
Hammond, G. B., English.
Hazlewood, G. R. English.
Johnson, J. J., Sulphur.
Luckett, C. D., English.
Myers, J., Alton.
Walls, J. W., Eckerty.

*Deceased.

DAVIESS COUNTY.

OFFICERS.

Geo. W. Willeford, President.
Henry Gers, Vice-Pres.
T. F. Spink, Sec.-Treas.
Henry Gers, Delegate.

CENSORS.

C. H. Yenne.
Henry Herr.
T. F. Spink.

MEMBERS.

Anderson, J. W., Odon.
Arthur, Martin L., Washington.
Danner, Rufus J., Elnora.
DeMotte, Jerome, Odon.
Donaldson, A. I., Washington.
Elrod, S. B., Raglesville.
Fitzgibbon, John, Washington.
Gers, Henry, Washington.
Herr, Henry, Washington.
Holder, Union H., Washington.
Hollingsworth, Ernest, Wash'gton.
Knapp, A. B., Washington.
Lett, Orris E., Glendale.
May, Vance, Washington.
Michaels, Joseph F., Montgomery.
Millis, E. D., Plainville.
McKittrick, Ora K., Plainville.
McPherson, S. L., Montgomery.
Parks, James F., Cumback.
Rankin, T. B., Odon.
Scudder, Chas. P., Washington.
Smoot, D. Brooks, Washington.
Spink, T. F., Washington.
Willeford, Geo. W., Washington.
Willeford, R. W., Washington.
Yenne, C. H., Washington.

REMOVED.

Faith, A. H., Washington.

SUSPENDED.

Wall, Chas. T., Washington.

DEARBORN COUNTY.

OFFICERS.

John Elfers, President.
F. M. Mueller, Vice-Pres.
Jas. F. Treon, Sec.-Treas.
H. H. Sutton, Delegate.

CENSORS.

E. J. Emmert.
E. J. Libbert.
D. E. Johnston.

MEMBERS.

Birchfield, J. W., New Alsace.
Bond, Marc L., Aurora.
Cowen, C. W., Rising Sun.
Duncan, Wm. F., Manchester.
Elfers, John, Rising Sun.
Emmert, E. J., Lawrenceburg.
Fagaly, A. T., Lawrenceburg.
Ford, O. P. M., Aurora.

Haynes, W. H., Aurora.
Henry, W. C., Aurora.
Holmes, Ella Sullivan, Aurora.
Jaquith, O. S., Lawrenceburg.
Johnston, David E., Moores Hill.
Ketcham, C. L., Guilford.
Libbert, E. J., Aurora.
Mueller, F. M., Lawrenceburg.
Newforth, C., Sunman.
Smith, Geo. F., Lawrenceburg.
Sutton, H. H., Aurora.
Treon, Jas. F., Aurora.

REMOVED.

Marshal, Coglie, Aurora.

SUSPENDED.

Craig, T. E., Lawrenceburg.
Long, H. P., Dillsboro.

DECATUR COUNTY.

OFFICERS.

I. M. Sanders, President.
Chas. L. Williams, Vice-Pres.
H. G. Fleming, Sec.-Treas.
G. S. Crawford, Delegate.

CENSORS.

R. M. Thomas.
B. S. White.
W. E. Thomas.

MEMBERS.

Alexander, J. H., Greensburg.
Bland, C., Greensburg.
Burroughs, J. P., Westport.
Crawford, G. S., Clifty.
Fleming, H. G., Newpoint.
Grover, C. B., Greensburg.
Howard, F. M., St. Paul.
Kercheval, C. F., Greensburg.
Riley, J. H. S., Sardinia.
Sanders, I. M., Greensburg.
Thomas, R. M., Greensburg.
Thomas, W. E., Clarksburg.
Welch, O. F., Westport.
White, B. S., Greensburg.
Williams, C. L., St. Paul.
Wood, J. M., Greensburg.

REMOVED.

Schofield, J. V., Greensburg.

WITHDRAWN.

Tremain, M. L. Adams.
Welch, J. A., Letts.

SUSPENDED.

Johnson, H., Newpoint.

DEKALB COUNTY.

OFFICERS.

Vesta M. Swarts, President.
W. F. Shumaker, Vice-Pres.
Frank Bevier, Secretary.
John C. Baxter, Treasurer.
C. S. Stewart, Delegate.

CENSORS.

F. M. Hines.
M. E. Klinger.
J. E. Showalter.

MEMBERS.

Baxter, J. C., Auburn.
Bevier, Frank, Waterloo.
Braughton, F. A., Waterloo.
Browne, Francis S., Garrett.
Brunson, V. C., Newville.
Buchtel, I. O., Auburn.
Casebeer, J. B., Auburn.
Darby, A. B., Waterloo.
Geisinger, Lewis N., Auburn.
Hines, F. M., Auburn.
Klinger, M. E., Garrett.
Lane, C. D., Waterloo.

Matheny, T. G., Auburn.
Nusbaum, J. D., Auburn.
Showalter, J. E., Waterloo.
Shumaker, W. F., Butler.
Stewart, C. S., Auburn.
Swarts, Vesta M. W., Auburn.
Swarts, Willard W., Auburn.
Thompson, J. F., Garrett.

SUSPENDED.

Acker, M. M., Butler.

REMOVED.

Maris, A. J., Waterloo.

DELAWARE COUNTY.

OFFICERS.

Hugh A. Cowing, President.
Winfield S. Brandon, Vice-Pres.
U. G. Poland, Sec.-Treas.
G. W. Bucklin, Delegate.

CENSORS.

Pliny C. Barnard.
Henry M. Winans.
Charles E. Miller.

MEMBERS.

Adams, B. O., Eaton.
Andrews, G. R., Muncie.
Atkinson, J. M., Eaton.
Ball, L. L., Muncie.
Barnard, P. C., Oakville.
Bell, J. N., New Burlington.
Bowles, H. S., Muncie.
Brandon, W. S., Daleville.
Bucklin, G. W., Muncie.
Burcham, H. C., Albany.
Cecil, A. A., Muncie.
Cooper, A. M., Muncie.
Cowing, H. A., Muncie.
Dunn, W. H., Gaston.
Fair, H. D., Muncie.
Franks, H. P., Muncie.
Frazer, Chas., Muncie.
Good, A. H., Selma.
Green, D. M., Muncie.
Green, G. R., Muncie.
Henry, T. L., McCowan.
Hill, F. E., Muncie.
Jackson, F. G., Muncie.
Jump, S. G., Selma.
Kemper, A. T., Muncie.
Kemper, G. W. H., Muncie.
Kemper, W. W., Muncie.
Kilgore, Frank T., Daleville.
Mann, E. B., Muncie.
Mansfield, T. J., Royerton.
Miller, C. E., Muncie.
Mitchell, W. P., Gaston.
Mix, C. M., Muncie.
Molloy, W. J., Muncie.
Owens, O. W., Muncie.
Poland, U. G., Muncie.
Rea, C. G, Muncie
Ried, S. M., Muncie.
Shaw, H. M., Gaston.
Shively, A. H.,* Yorktown.
Smith, C. W., Selma.
Spickermon, H. R., Muncie.
Spurgeon, O. E., Muncie.
Spurgeon, W. A., Muncie.
Stover, C. J., Eaton.
Tindal, E. F., Muncie.
Trent, I. N., Muncie.
Tuttle, J. R., Wheeling.
Vanderburg, J. M., Albany.
Vinton, A. E., Muncie.
Wadsworth, W. W., Muncie.
Winans, H. M., Muncie.
Wright, C. H., Yorktown.

HONORARY.

Mitchell, Harvey, Muncie.
Murray, A. L., Eaton.
Munsey, D. O., Gaston.

SUSPENDED.

Downing, J. F., Yorktown.
Downing, J. R., Yorktown.

*Deceased.

DUBOIS COUNTY.

OFFICERS.

E. G. Lukemeyer, President.
L. B. Johnson, Vice-President.
C. R. Ramsbrok, Sec.-Treas.
J. P. Salb, Delegate.

CENSORS.

C. W. Schwartz.
H. W. Stork.
A. G. Wollenmann.

MEMBERS.

Wollenmann, A. G., Ferdinand.
Lukemeyer, E. G., Huntingburg.
Lukemeyer, Louis, Huntingburg.
Salb, J. P., Jasper.
Ramsbrok, C. R., Huntingburg.
Johnson, L. B., Ireland.
Knapp, Victor, Ferdinand.
Kelso, U. G., Dubois.
Schwartz, C. W., Huntingburg.
Steincamp, E. F., Haysville.
Schriefer, E. E., Ferdinand.
Stark, H. W., Holland.
Brannock, B. B., Jasper.
Casper, John, Jasper.
Sturm, E. A., Jasper.

SUSPENDED.

Seneff, J. H., Crystal.
Knapp, H. C., Haysville.

ELKHART COUNTY.

OFFICERS.

A. C. Yoder, President.
G. B. Hoopingarner, Vice-Pres.
J. W. Kistner, Sec-Treas.

CENSORS.

C. M. Eisenbeiss.
I. J. Becknell.
A. L. Fisher.

MEMBERS.

Ash, E. E., Goshen.
Bauman, N. C., Goshen.
Becknell, I. J., Goshen.
Brothers, G. M., New Paris.
Cook, J. A., Goshen.
De Frees, H. J., Nappanee.
Dewey, F. N., Elkhart.
Dutrow, C. E., Bristol.
Eby, H. W., Goshen.
Eckleman, F. C., Elkhart.
Eckleman, M. M., Elkhart.
Eisenbeiss, C. M., Elkhart.
Farver, M. A., Middlebury.
Fisher, A. L., Elkhart.
Fleming, F. C., Elkhart.
Fleming, J. C., Elkhart.
Frink, C. W., Elkhart.
Goodrich, C. D., Elkhart.
Haggerty, R. I., Elkhart.
Hall, H. W., Millersburg.
Hani, W. F., Elkhart.
Hauenstein, G. W., Elkhart.
Hollingsworth, A. S., Goshen.
Hoopingarner, G. B., Elkhart.
Ihrig, F. M., Goshen.
Inks, J. S., Nappanee.
Irwin, A. J., Port Huron, Mich.
Kirby, G. W., Millersburg.
Kistner, J. W., Elkhart.
Knepple, La Mar, Wakarusa.
Kreider, M. K., Goshen.
Kreider, W. B., Goshen.
Kuhn, B. F., Elkhart.
Lemon, H. K., Goshen.
Lockwood, R. L., Elkhart.
McCormick, R. S., Nappanee.
Mathews, James, New Paris.
Miller, D. L., Goshen.

Mumaw, H. A., Elkhart.
Murphy, R. M., Elkhart.
Neal, W. A., Elkhart.
Porter, J. B., Elkhart.
Price, M. D., Nappanee.
Price, W. A., Nappanee.
Sensenich, A. S., Wakarusa.
Sensenich, Roscoe, Wakarusa.
Short, I. W., Elkhart.
Snapp, J. A., Goshen.
Spohn, G. W., Elkhart.
Stauffer, W. A., Elkhart.
Stuckman, E. D., Nappanee.
Teters, B. F., Middlebury.
Thomas, W. H.,* Elkhart.
Wagner, S. C., Wakarusa.
Walters, S. W., New Paris.

*Deceased.

Whitmer, B. F., Goshen.
Work, J. A., Elkhart.
Yoder, A. C., Goshen.

DENTISTS.

Adams, F. P., Elkhart.
Cummins, S. M., Elkhart.
Goebel, Wm., Elkhart.
Pounder, Malcolm, Elkhart.
Werner, J. F., Elkhart.
Vallette, W O., Goshen.
Zinn, G. E., Elkhart.

REMOVED.

Rieman, Wm. H., Millersburg.
Washburne, G. F., Elkhart.

SUSPENDED.

Edwards,, S. A., Goshen.
Whippy, Geo. A., Goshen.

FAYETTE COUNTY.

OFFICERS.

H. M. Lamberson, President.
U. C. Ambrose, Vice-Pres.
E. E. Hamilton, Sec.-Treas.

CENSORS.

V. D. Ludwick.
U. C. Ambrose.
J. R. Mountain.

MEMBERS.

Ambrose, U. C., Springersville.
Carlisle, P. G., Connersville.
Clark, J. H., Connersville.
Dale, Omar E., Alquina.
Derbyshire, E., Connersville.
Dillman, Lurton D., Connersville.
Elliott, R. H., Connersville.
Gordin, S. E., Alquina.
Hamilton, E. Everett, Connersville.
Hamilton, S. N., Connersville.
Lamberson, H. M., Connersville.
Ludwick, V. D., Connersville.
Mitchel, F. L., Everton.
Mountain, Joseph R., Connersville.
Phillips, W. R., Orange.
Sipe, R. W., Orange.
Spilman, F. J., Connersville.
Van Pelt, Geo. F., Connersville.
Worster, W. W., Connersville.

SUSPENDED.

Chitwood, Jno. E., Connersville.

FLOYD COUNTY.

OFFICERS.

G. H. Cannon, President.
W. J. Leach, Vice-Pres.
C. P. Cook, Sec.-Treas.
E. P. Easley, Delegate.

CENSORS.

William Moore.
R. L. Rutherford.
J. E. Bird.

MEMBERS.

Bird, J. E., New Albany.
Cannon, G. H., New Albany.
Cook, C. P., New Albany.
Davis, C. P., New Albany.
Easley, E. P., New Albany.
Funk, Austin, New Albany.
Funk, C. C., New Albany.
Garey, Dumont,* New Albany.
Hazlewood, John, New Albany.
Leach, W. J., New Albany.
Maas, Alice M., New Albany.
McIntyre, C. W., New Albany.
McKamy, Anna J., New Albany.
Moore, Wm., New Albany.
Neat, T. C., New Albany.
Richards, Wm. R., New Albany.
Rutherford, R. L., New Albany.

*Deceased.

Shacklett, H. B., New Albany.
Sigmon, E. L., New Albany.
Starr, W. L., New Albany.
Tebault, W. P., New Albany.
Weathers, J. F., New Albany.
Wilcox, F. H., New Albany.
Winstandley, W. C., New Albany.
Wolfe, H. S., New Albany.
Wray, Jno. T., New Albany.

SUSPENDED.

Lemon, J. H., New Albany.
Mitchell, F. A., New Albany.

EXPELLED.

Davis, D. F., New Albany.
Hazlewood, F. W., New Albany.

FOUNTAIN COUNTY.

OFFICERS.

F. A. Shoaf, President.
Albert C. Holly, Vice-Pres.
George Rowland, Sec.-Treas.
Walter H. Dinsmore, Del.

CENSORS.

M. Petet.
Charles J. Finney.
W. H. Ross.

MEMBERS.

Becket, C., Attica.
Bolling, Louis A., Attica.
Burlington, J. Roy, Attica.
Campbell, T. B., West Lebanon.
Case, Marvin L., Attica.
Claypool, R. W., Newtown.
De Laney, S. S., Williamsport.
Dinsmore, Walter H., Kramer.
Evans, John M., Mellott.
Finney, Charles J., Attica.
Holly, Albert C., Attica.
Mock, J. W.,* Covington.
Myers, C. L., Covington.
Pearlman, Samuel, Stone Bluff.
Petet, Marshall, Veedersburg.
Porter, George S., Williamsport.

*Deceased.

Pugh, F. H., Williamsport.
Ross, W. H., Veedersburg.
Rowland, George, Covington.
Rupert, A. M., Attica.
Shoaf, F. A., Veedersburg.
Sparks, Joseph Tyndall, Yeddo.
Spining, A. L., Covington.
Walter, F. J., Mudlavia.

SUSPENDED.

Kendall, Carey W., Pine Village.
Rice, John T., Attica.

REMOVED.

Ludlow, Chas. H., Covington.
Miller, G. W., Covington.

FRANKLIN COUNTY.

OFFICERS.

J. W. MacCammon, President.
Calvin Carter, Sec. Treas.

MEMBERS.

Carter, Calvin, Brookville.
Forry, Benj. F., Bath.
Gregory, Henry, Laurel.
MacCammon, Jno. W., Laurel.
Preston, A. L., Fairfield.

REMOVED.

Allen, Irvin, O., Metamora.
Carter, Laura, Shelbyville.

FULTON COUNTY.

OFFICERS.

C. E. Gould, President.
A. E. Stinson, Vice-Pres.
C. J. Loring, Sec.-Treas.

CENSORS.

M. O. King.
J. M. Ward.
H. W. Taylor.

MEMBERS.

Brown, Archibald, Rochester.
Deilman, F. C., Fulton.
Gilbert, A. Irvin, Kewanna.
Gould, C. E., Rochester.
Johnson, A., Akron.
King, M. O., Rochester.
Loring, C. J., Rochester.
Rannells, J. W., Rochester.
Rhodes, E. E., Rochester.
Richards, J., Fulton.
Scott, J. C., Talma.
Shaffer, W. S., Rochester.
Slonaker, C. L., Leitersford.
Stinson, A. E., Athens.
Taylor, H. W., Rochester.
Ward, J. M., Kewanna.

REMOVED.

Hoffman, G. E., Rochester.

GIBSON COUNTY.

OFFICERS.

M. P. Hollingsworth, Pres.
W. G. Hopkins, Vice-Pres.
A. R. Burton, Sec.-Treas.
F. Blair, Delegate.

CENSORS.

J. L. Morris.
V. H. Marchant.
J. W. McGowan.

MEMBERS.

Alexander, H. H., Princeton.
Anderson, R. S., Princeton.
Arthur, H. M., Hazleton.
Blair, Frank, Princeton.
Blair, W. W., Princeton.
Burlingame, E. G., Oakland City.
Burton, A. R., Princeton.
Clark, J. H., Princeton.
Critchfield, J. S., Princeton.
Cushman, R. A., Princeton.

Gudgel, Harry B., Hazleton.
Hollingsworth, M. P., Princeton.
Hopkins, W. G., Ft. Branch.
Kendle, G. C., Princeton.
Leister, William L., Oakland City.
Loudan, E. B., Hazleton.
McGowan, John W., Oakland City.
Marchant, V. H., Haubstadt.
Mason, Geo. C., Oakland City.
Maxam, F. H., Princeton.
Mills, Mary, Princeton.
Montgomery, J. R., Owensville.
Montgomery, Martin, Owensville.
Moore, P. B., Owensville.
Morris, J. L., Kings.
Morris, W. F., Fort Branch.
Payne, F. M., Princeton.
Sanders, J. M., Princeton.
Strickland, George, Jenks, I. T.
Swan, D. H., Francisco.
Wertz, T., Princeton.
Ziliak, A. L., Princeton.
Ziliak, J. E., Haubstadt.
Zimmerman, J., Lynnville.

SUSPENDED.

Martin, C. A., Princeton.

REMOVED.

Steinkamp, E. T., Haubstadt.

GRANT COUNTY.

OFFICERS.

C. J. Overman, President.
George Daniels, Vice-Pres.
Burnham C. Dale, Secretary.
M. T. Shively, Treasurer.
L. H. Conley, Delegate.

CENSORS.

E. O. Harrold.
J. W. Patterson.
O. W. McQuown.

MEMBERS.

Barns, W. C.,* Marion.
Bectol, C. O., Marion.
Black, W. C., Marion.
Bridge, L. M., Marion.
Cameron, V. V., Marion.
Clark, N. W., Sweetser.
Conley, L. H., Gas City.
Crumrine, I. S. J., Landess.
Dale, B. C., Marion.
Daniels, George, Marion.
Daniels, G. W., Marion.
Davis, A. T., Marion.
Dooley, A. J., Marion.
Eshelman, L. H., Marion.
Fankboner, W. A., Marion.
Flynn, Wm., Marion.
Francis, W. R.,* Marion.
Fulenwider, H. L., near Rigdon.
Harrold, E. O., Marion.
Henley, Glen, Fairmount.
Holliday, D. A., Fairmount.
Holliday, L. D., Fairmount.
Jeffries, H. S., Upland.
Johnson, J. E., Marion.
Knight, J. C., Jonesboro.
Lewis, M. J., Marion.
Lloyd, A. W., Marion.
McKay, J. D., Marion.
McQuown, O. W., Marion.
Matteson, D. E., Marion.
Matteson, J. A., Nat. Mil. Home.
Miller, Harry, Nat. Mil. Home.
Overman, C. J., Marion.
Patterson, J. W., Fairmount.
Powell, N. B., Marion.
Seaton, Albert, Nat. Mil. Home.

*Deceased.

Shively, M. T., Marion.
Stout, O. L., Upland.
Sweezey, Harry, Marion.
Taylor, D. B., Nat. Mil. Home.
Toney, J. M., Van Buren.
Trook, E. M., Marion.

*Deceased.

Whitson, E. M.,* Jonesboro.
Whitson, John, Gas City.
Williams, Lewis,* Marion.
Williamson, Harry, Marion.

SUSPENDED.

Hamilton, A. A., Marion.
Wharton, W. L., Matthews.

GREENE COUNTY.

OFFICERS.

L. A. Hyde, President.
W. H. Cole, Vice-Pres.
B. A. Rose, Secretary.
J. E. Talbott, Treasurer.
E. T. Sherwood, Delegate.

CENSORS.

H. R. Lowder.
W. R. Cravens.
C. D. Mallett.

MEMBERS.

Chambers, B. F.. Lyons.
Cole, W. H., Switz City.
Cravens, E. R., Linton.
Cravens, W. R., Bloomfield.
Gray, Jno. W., Bloomfield.
Harrah, J. M., Switz City.
Hyde, L. A., Linton.
Knoefel, A. F., Linton.
Lowder, C. M., Dugger.
Lowder, H. R., Bloomfield.
Lukenbill, L. C., Marco.
Mallett, C. D., Switz City.
Mason, E. R., Bloomfield.
Quillen, S. N., Linton.
Rose, B. A., Linton.
Sherwood, B. M., Linton.
Sherwood, E. T., Linton.
Talbott, J. E., Linton.
Thayer, N. M., Linton.
Van Sandt, F. A., Bloomfield.

SUSPENDED.

Aydelotte, Thos., Lyons.
Cook, P. M., Solsberry.

HAMILTON COUNTY.

OFFICERS.

H. H. Thompson, President.
E. D. McKinley, Vice-Pres.
J. D. Sturdevant, Sec.-Treas.
C. H. Tomlinson, Delegate.

MEMBERS.

Axline, J. A., Noblesville.
Bills, Leroy, Atlanta.
Camp, W. E., Clarksville.
Dove, S. C., Westfield.
Fodrea, Z. H., Westfield.
Graham, W. B., Noblesville.
Hanna, J. E., Clarksville.
Haworth, M. C., Noblesville.
Hershey, F. C., Carmel.
Hershey, K. C., Carmel.
Hicks, J. L., Arcadia.
Jones, Oscar, Jolietville.

Loehr, E. C., Noblesville.
McKinley, E. D., Atlanta.
Parr, J. N., Jolietville.
Ray, C. C., Arcadia.
Sturdevant, J. D., Noblesville.
Thompson, H. H., Noblesville.
Tomlinson, C. H., Cicero.
Tucker, A. R., Noblesville.
Tucker, F. A., Noblesville.
Wishard, E. E., Noblesville.

SUSPENDED.

Baldwin, S. J., Hortonville.
Young, J. B., Cicero.

HANCOCK COUNTY.

OFFICERS.

J. A. Comstock, President.
Wm. A. Justice, Vice-Pres.
J. E. Ferrell, Sec.-Treas.

CENSORS.

C. K. Bruner.
Warren R. King.
E. R. Sisson.

MEMBERS.

Barnes, C. A., Greenfield.
Bruner, C. K., Greenfield.
Bruner, Mary L., Greenfield.
Comstock, James A., Greenfield.
Ferrell, J. E., Eden.
Howard, Noble P., Greenfield.
Justice, Wm. A., Greenfield.
King, Warren R., Greenfield.
Selman, Frank W.,* Greenfield.
Selman, John W., Greenfield.
Sisson, Ernest R., Maxwell.
Slocum, Stewart, Fortville.
Allen, J., Charlottsville.

SUSPENDED.

Cory, J. D., McCordsville.
Gibbs, Charles Milo, Greenfield.
Heller, Oscar, Greenfield.
Larimore, J. M., Greenfield.
Titus, Chas., Warrington.

*Deceased.

HARRISON COUNTY.

OFFICERS.

Z. T. Funk, President.
P. H. Schoen, Vice-Pres.
J. C. Bottorff, Sec.-Treas.
Z. T. Funk, Delegate.

CENSORS.

J. E. Lawson.
Amzi Weaver.
F. E. Wolfe.

MEMBERS.

Baxter, J. W., Lanesville.
Bottorff, J. C., Corydon.
Boston, Charles H., Bradford.
Briscoe, Clarence E., Depauw.
Byrne, John D., New Salisbury.
Daniel, William, Corydon.
Davis, Wm. H., Corydon.
Dean, Daniel L., Elizabeth.
Denbo, William R., Mauckport.
Funk, Z. T., Corydon.
Glenn, L. F., Crandall.
Hurst, Steven H., Laconia.
Lawson, J. E., Corydon.
Martin, G. F., Corydon.
Neely, J. L., Corydon.
Schoen, P. H., New Middletown.
Weaver, Amzi, Elizabeth.
Wolfe, F. E., Lanesville.
Wolfe, Z. C., Corydon.

HENDRICKS COUNTY.

OFFICERS.

Ernest Cooper, President.
John S. Ragan, Vice-Pres.
W. T. Lawson, Sec.-Treas.
W. T. Lawson, Delegate.

CENSORS.

O. B. Johnson.
John A. Osborn.
Joel T. Barker.

MEMBERS.

Adams, Thomas J., North Salem.
Allred, G. G., Danville.
Barker, Joel T., Danville.
Barker, Thomas R., Danville.
Carter, Amos, Plainfield.
Cooper, Ernest, Plainfield.
Davidson, A. W., Brownsburg.
Farabee, C. E., Indianapolis.
Hicks, L. F., Stilesville.
Hoadley, W. J., Danville.
Hunt, Stephen, Coatsville.
Hunt, Tighlman,* Plainfield.
Jessup, Maria Allen, Friendswood.
Johnson, O. B.,* Lizton.
Lawson, W. T., Danville.
McClintock, Chas. W., Pittsboro.
Marsh, John L.,Brownsburg.
Osborn, Harry S., Pittsboro.
Osborn, John A., Pittsboro.
O'Brien, B. M., New Winchester.
O'Brien, Wm. M., Danville.
Ragan, John S., Plainfield.
Reynolds, D. Monroe, Clayton.
Royer, E. R., North Salem.
Smith, Thomas G., Brownsburg.
Summers, H. C., Amo.
Terrell, W. H., Stilesville.
White, C. A., Danville.

*Deceased.

HONORARY.

Parker, M. G., Danville.

HENRY COUNTY.

OFFICERS.

J. C. Blossom, President.
George H. Smith, Vice-Pres.
J. E. Hiatt, Sec.-Treas.
J. E. Hiatt, Delegate.

CENSORS.

E. H. Brubaker.
J. A. Tuley.
F. L. Thornburgh.

MEMBERS.

Andrews, George R., Muncie.
Bartlett, C. G., Lewisville.
Benedict, H., Springport.
Blossom, J. C., Mt. Summit.
Brubaker, E. H., New Castle.
Butler, C. A.,* New Castle.
Davis, Elmer J., Mooreland.
Ferris, Edgar S., New Castle.
Graff, Morton P., Lewisville.
Greist, H. W., New Castle.
Gronendyke, O. J., New Castle.
Gronendyke, T. W., New Castle.
Hardesty, J. C., New Castle.
Hess, F. C., Cadiz.
Hestler, O. J., Blountsville.
Hiatt, J. E., New Castle.
Holloway, O. E., Knightstown.
Kirk, E. E., Spiceland.
Koons, H. H., New Lisbon.
McShirley, J. L., Sulphur Springs.
Mendenhall, E. T., New Castle.
Misener, Walter L., Mechanicsburg.
Paul, J. O., New Castle.
Post, B. O., Sulphur Springs.

*Deceased.

Shannon, J. B., Greensboro.
Smelser, S. G., Shirley.
Smith, Geo. H., Knightstown.
Stuart, Robert, Spiceland.
Stout, Charles M., Middletown.
Thornburgh, F. S., Middletown.
Tulley, J. A., Millville.
VanMatre, C. E., New Castle.
Wallage, Geo. W., Middletown.
Waters, S. C., Middletown.
Wilson, Ralph, Shirley.

*Deceased.

RETIRED.

Boor, W. F., New Castle.

REMOVED.

Bailey, G. D., Spiceland.
Stoddard, J. M., Kennard.

SUSPENDED.

Crouse, Henry M., Knightstown.

HOWARD COUNTY.

OFFICERS.

E. K. Friermood, President.
J. W. Wright, Vice-Pres.
W. I. Scott, Sec.-Treas.
J. O. Garr, Delegate.

CENSORS.

Edgar Cox.
J. H. Ross.
J. McL. Moulder.

MEMBERS.

Bates, J. A.,* Kokomo.
Carnelley, James H., Kokomo.
Chancellor, S. R., Kokomo.
Chittick, Andrew, Burlington.
Cox, Edgar, Kokomo.
Deweese, L., Hemlock.
Friermood, E. K., Greentown.
Garr, J. O., Kokomo.
Hamilton, N. C., Kokomo.
Harrison, W. H., Kokomo.
McClurg, W. H., Kokomo.
Martin, A. A., Ridgeway.
Martin, W. H., Kokomo.
Maughmer, G. C., Kokomo.
Miller, H. C., Greentown.
Moore, Emma W., Kokomo.
Moulder, J. McL., Kokomo.
Peters, D. C., Greentown.
Powell, E. U., Greentown.
Puckett, J. L., Kokomo.
Ross, J. H., Kokomo.
Ross, R. H., Cassville.
Scott, R. F., Kokomo.
Scott, W. I., Kokomo.
Simmons, L. A., Kokomo.
Smith, R. H., Kokomo.
Thorne, J. C. F., Kokomo.
Varner, R. D., Kokomo.
Wright, J. W., Kokomo.

*Deceased.

HONORARY.

Kern, L., Kokomo.

REMOVED.

Miller, Earl, Kokomo.
Moore, J. B., Kokomo.

SUSPENDED.

Miller, L. C., Alto.

HUNTINGTON COUNTY.

OFFICERS.

S. V. Wilking, President.
Wm. C. Chafee, Vice-Pres.
Ervin Wright, Sec.-Treas.
R. F. Frost, Delegate.

CENSORS.

C. L. Wright.
B. H. B. Grayston.
C. W. Fry.

MEMBERS.

Chafee, Wm. C., Huntington.
Dippell, Emil T., Huntington.
Fisher, E. S., Markle.
Frost, R. F., Huntington.
Fry, Chas. W., Huntington.
Good, Chas. H., Warren.
Grayston, B. H. B., Huntington.
Grayston, Chas. E., Huntington.
Grayston, Fred W., Huntington.
Hicks, Jas. M., Huntington.
Hunter, Jno. R., Huntington.
Kemp, Jos. W., Roanoke.
McIlvain, H. K., Huntington.
Morgan, F. B., Huntington.
Nickols, Wm. E., Andrews.
Northrup, A. H., Markle.
Scott, N. W., Huntington.
Shaffer, A. H., Huntington.
Sprowl, John S., Warren.
Wilking, S. V., Roanoke.
Wright, Chas. L., Huntington.
Wright, Ervin, Huntington.

JACKSON COUNTY.

OFFICERS.

G. O. Barnes, President.
C. E. Gillespie, Vice-Pres.
G. H. Kamman, Sec.-Treas.
J. K. Ritter, Delegate.

CENSORS.

J. K. Ritter.
M. F. Gerrish.
A. May.

MEMBERS.

Barnes, G. O., Seymour.
Cummings, D. J., Jr., Ewing.
Cummings, D. J., Sr., Medora.
Empson, Blaine, Seymour.
Gerrish, M. F., Seymour.
Gillespie, C. E., Crothersville.
Graessle, G. G., Seymour.
Harrod, N., Tampico.
Heller, F., Brownstown.
Hill, L. B., Seymour.
Jenkins, J. M., Cortland.
Kamman, G. H., Seymour.
May, A., Crothersville.
Osterman, A. G., Seymour.
Ritter, J. K., Seymour.
Ruddick, L., Seymour.
Shields, J. M., Seymour.
Washburn, H. A., Freetown.

JAY COUNTY.

OFFICERS.

C. W. Mackey, President.
J. B. Garber, Vice-Pres.
Harriet Wiley, Sec.-Treas.
J. B. Garber, Delegate.

CENSORS.

Samuel Mason.
C. C. Mills.
J. T. Dickes.

MEMBERS.

Bockoven, C., Briant.
Bockoven, S. Marion, Briant.
Brokaw, R. E., Portland.
Caylor, C. E., Pennville.
Dickes, J. T., Portland.
Garber, J. B., Dunkirk.
Hall, J. W., Portland.
Jay, M. T., Portland.
Mackey, C. W., Portland.
Mason, Samuel, Pennville.
Mills, C. C., Redkey.
Moyer, F. E., Pennville.
Murray, D. P., Dunkirk.
Paddock, C. A., Portland.
Perry, G. L., Portland.
Schwartz, W. D., Portland.
Sims, I. G., Portland.
Walker, W. H., Portland.
Wiley, Harriet, Portland.

REMOVED.

Nixon, J. E., New Mt. Pleasant.

SUSPENDED.

Shepherd, G. W., Redkey.

JEFFERSON COUNTY.

OFFICERS.

George E. Denny, President.
S. A. Whitsett, Vice-Pres.
J. Cooperider, Sec.-Treas.

CENSORS.

George E. Denny.
R. W. Cochran.
Vincent Shepherd.

MEMBERS.

Austin, Fred H., North Madison.
Calvert, J. H., Milton, Ky.
Christie, James H., Canaan.
Cochran, R. W., Madison.
Cooperider, J., Madison.
Copeland, Charles C., N. Madison.
Denny, Charles, Bryantsburg.
Denny, George E., Madison.
Graham, Nathan P., Madison.
Hampton, S. E., Milton, Ky.
Kremer, Nicholas A., Madison.
Lewis, George C., Madison.
McKeand, Robert, Chelsea.
Mathews, Wm. R., China.
Ryker, Charles, Manville.
Shepherd, Vincent, Dupont.
Totten, Evan, Madison.
Whitsett, S. A., Kent.
Williams, C. F., Madison.

REMOVED.

Childs, A. G. W., Madison.
Rawlings, J. V., Wirt.

JENNINGS COUNTY.

OFFICERS.

W. J. Mitchell, President.
J. R. Love, Vice-Pres.
W. H. Stemm, Sec.-Treas.
F. A. Martin, Delegate.

CENSORS.

W. H. Richardson.
D. R. Saunders.
D. W. Robertson.

MEMBERS.

Adams, S. D., Brewersville.
Case, W. W., Zenas.
Davenport, H. F., North Vernon.
Fuller, W. H., North Vernon.
Gaddy, O., Paris Crossing.
Green, J. H., No. Vernon.
Love, J. R., Zenas.
McClure, J. W., Butlerville.
Martin, F. A., Commiskey.
Mitchell, W. J., No. Vernon.
Richardson, W. H., Vernon.
Robertson, D. W., Deputy.
Saunders, D. R., No. Vernon.
Shotts, H. R., Nebraska.
Stemm, W. H., No. Vernon.
Wildman, W. A., San Jacinto.
Wilson, W. L., Scipio.

REMOVED.

Cronch, J. H., N. Vernon.
Redman, L. H., Scipio.

JOHNSON COUNTY.

OFFICERS.

Z. Carnes, President.
D. W. Sheek, Sec.-Treas.

CENSORS.

R. M. Elliott.
H. J. Hall.
J. A. Craig.

MEMBERS.

Carnes, Z., Greenwood.
Craig, J. A., Greenwood.
Elliott, R. M., Franklin.
Hall, H. J., Franklin.
Lanam, J. H., Franklin.
Phipps, D. L., Whiteland.
Sheek, D. W., Greenwood.
Terhune, R. W., Whiteland.
Wallace, B., Franklin.
Whitesides, L. L., Franklin.
Willan, R. Day, Trafalgar.

KNOX COUNTY.

OFFICERS.

T. M. Staley, President.
N. E. Beckes, Vice-Pres.
C. L. Boyd, Sec.-Treas.
W. H. Davenport, Delegate.

CENSORS.

William Davenport.
L. B. Staley.
Royse Davis.

MEMBERS.

Amy, W. E., Bicknell.
Beard, Schuyler C., Vincennes.
Beckes, Norman E., Vincennes.
Benham, Charles W., Vincennes.
Boyd, C. L., Vincennes.
Buley, David M., Vincennes.
Caney, P. H., Vincennes.
Davenport, Wm. H.. Vincennes.
Davis Royse, Decker.
Downey, L. J., Vincennes.
Glenn, Marion, Vincennes.
Held, Henry W., Vincennes.
Johnson, M. A., Oaktown.
Jones, I. G., Vincennes.
Kessinger, W. E., Sandborn.
Knapp, George, Vincennes.
McCoy, James N., Vincennes.
McDowell, James D., Vincennes.

McDowell, M. M., Vincennes.
McGowan, T. J., Vincennes.
Maxedon, Thomas H., Vincennes.
Moore, Maurice G., Vincennes.
Ramsey, J. P., Vincennes.
Reeve, Joseph L., Edwardsport.
Smadel, Joseph W., Vincennes.
Somes, Joseph F., Vincennes.
Staley, L. B., Bicknell.
Staley, Thomas M., Bicknell.
Stewart, C. E., Vincennes.
Trueblood, J. W., Monroe City.

HONORARY.

Smith, Hubbard M., Vincennes.

SUSPENDED.

Fox, R. H., Freelandsville.
Grim, G. B., Oaktown.
Hall, Silas, Vincennes.
Hoover, L., Decker.
McDowell, L. C., Freelandsville.

KOSCIUSKO COUNTY.

OFFICERS.

Chas. R. Long, President.
W. S. Leiter, Vice-Pres.
I. B. Webber, Sec.-Treas.
I. B. Webber, Delegate.

CENSORS.

C. E. Leedy.
C. W. Burket.
P. G. Fermier.

MEMBERS.

Amiss, J. M., Silver Lake.
Anglin, G. W., Warsaw.
Bash, J. M., Warsaw.
Burket, C. W., Warsaw.
Chase, E. L., North Webster.
Clutter, T. J., Atwood.
Dunfic, J. W., Etna Green.
Fermier, P. G., Leesburg.
Ford, L. W., Syracuse.
Hines, L. A., Warsaw.
Hines, W. L., Warsaw.
Howard, Glen B., Warsaw.
Hoy, B. F., Syracuse.
Ketchum, Geo. V., Portland, Ore.
Leckrone, Ira, Silver Lake.
Leedy, C. E., Pierceton.
Leiter, W. S., Claypool.
Long, Chas. R., Pierceton.
Lyons, J. H., North Webster.
McDonald, A. C., Warsaw.
Nehrbas, J. G., Winona Lake.
Potter, J. E., Milford.
Rowe, A. M., Warsaw.
Schoonover, Wm. R., Warsaw.
Shackelford, T. J., Warsaw.
Thomas, Chas. E., Leesburg.
Underwood, Charles G., Warsaw.
Warvel, J. L., Sidney.
Webber, I. B., Warsaw.
Yocum, M. G., Mentone.

SUSPENDED.

King, H. O., Kendallville.

LAGRANGE COUNTY.

OFFICERS.

F. C. Wade, President.
C. W. Dancer, Vice-Pres.
Dwight W. Dryer, Sec.-Treas.
A. R. Wyatt, Delegate.

CENSORS.

A. R. Wyatt.
Wm. H. Short.
A. G. Grubb.

MEMBERS.

Broughton, F. H., Wolcottville.
Cook, William M., Lagrange.
Dancer, Chas. W., Stroh.
Dryer, D. W., Lagrange.
Eash, S. M., Shipshewana.
Ferguson, W. A., Brighton.
Fowler, W. E., Lagrange.
Grubb, A. G., Mongo.
Hildebrand, W. O., Topeka.
Hostetler, A. J., Lagrange.
Newnam, H. M., South Milford.
Quick, Sidney S., Lagrange.
Rarick, J. E., Wolcottville.
Schrock, H. W., Lagrange.
Schrock, J. J., Shipshewana.
Schrock, O. L., Lagrange.
Shrock, Stewart, Lagrange.
Short, Jno. L., Lagrange.
Short, Wm. H., Lagrange.
Vaughan, I. J., Topeka.
Wade, F. C., Lima.
Wyatt, A. R., Lagrange.
Youngkin, J. W., Wolcottville.

HONORARY.

Lake, George B., Wolcottville.
Rerick, J. H., Lagrange.

REMOVED.

Foster, John H., Wolcottville.

LAKE COUNTY.

OFFICERS.

Howat, W. F., President.
G. D. Brannon, Vice-Pres.
H. E. Sharrer, Sec.-Treas.
C. W. Campbell, Delegate.

CENSORS.

H. E. Sharrer.
C. W. Campbell.
E. M. Shanklin.

MEMBERS.

Brannon, G. D., Crown Point.
Buchanan, W. A., Hammond.
Campbell, Cyrus W., Hammond.
Chevegney, J. A. J., Hammond.
Chidlaw, A., Hammond.
Clark, J. T., Hammond.
Dewey, E. L., Whiting.
Gibbs, J. C., Crown Point.
Gordon, E. R., Hobart.
Hoskins, G. H., Whiting.
Howat, W. F., Hammond.
Hughes, W. L., Indiana Harbor.
Kelly, L. H., Hammond.
Kohr, Thos. W., East Chicago.
Lauer, A. J., Whiting.
Oberlin, T. W., Hammond.
Pannenborg, J. C., Hammond.
Putnam, W. E., Whiting.
Robinson, C. C., Ind. Harbor.
Ross, Alex. A., East Chicago.
Sauer, Fred'k W., Indiana Harbor.
Schlicker, A. G., East Chicago.
Scull, Eleanor, Hammond.
Shanklin, E. M., Hammond.
Sharrer, H. E., Hammond.
Take, John F., Whiting.
Teegarden, J. A., Indiana Harbor.
Vaughn, Martin, Hammond.
Weis, W. D., Hammond.
Wells, E. M., Whiting.

SUSPENDED.

Ainsley, Robert, Indiana Harbor.
Button, O. E., Crown Point.
Faulkner, Clara, Hobart.
Mackey, R. C., Hobart.
Schwartz, W. P., Crown Point.
Stauffer, Edwin R., Hammond.
Watson, J. C., Hobart.
Willetts, A. J., Lowell.

LAPORTE COUNTY.

OFFICERS.

F. A. McGrew, President.
F. R. Warren, Vice-Pres.
Whitefield Bowers, Secretary.
M. S. Smith, Treasurer.
Whitefield Bowers, Delegate.

CENSORS.

B. C. Bowell.
J. L. Gray.
F. V. Martin.

MEMBERS.

Bacon, V. V., Michigan City.
Blinks, E. G., Michigan City.
Bowell, B. Carr, Laporte.
Bowers, Whitefield, Michigan City.
Buck, Dexter A., Laporte.
Crawford, E. F. W., Hanna.
Drescher, Marie L., Michigan City.
Eberhardt, W., Michigan City.
Gray, J. L., Laporte.
Hollenbeck, B. W., Westville.
Kerrigan, J. J., Michigan City.
Ledbetter, J. N., Michigan City.
Leeds, F. R., Michigan City.
Long, H. H., Laporte.
Malone, B. Elizabeth, Laporte.
Martin, F. V., Michigan City.
Martin, J. S., Rolling Prairie.
McGrew, F. A., Laporte.
Milligan, J. W., Michigan City.
Rogers, J. B., Michigan City.
Smith, M. S., Laporte.
Sutherland, O. L., Laporte.
Thompson, Harry John, Laporte.
Tillotson, A. G., Michigan City.
Warren, F. R., Michigan City.
Wilcox, F. T., Laporte.
Wilson, H. W., Michigan City.
Wilson, L. A., Kingsbury.

HONORARY.

Darling, N. S., Laporte.

SUSPENDED.

Annis, E. L., Laporte.
Campbell, H. M., Westville.
Ivey, D. R., LaCrosse.
Martin, H. H., Laporte.
Meyer, J. H. Wm., Laporte.

LAWRENCE COUNTY.

OFFICERS.

Walter C. Sherwood, Pres.
Arthur J. McDonald, Vice-P.
Riley Shrum, Sec.-Treas.
Chas. H. Emery, Delegate.

CENSORS.

C. H. Emery.
John R. Andrews.
Frank E. Stipp.

MEMBERS.

Andrews, J. R., River Vale.
Bare, A. W., Bryantsville.
Bullitt, Thomas W., River Vale.
Byrns, James D., Mitchell.
Dierking, A. W., Oolitic.
Dings, W. H., Mitchell.
Donica, T. M., Bedford.
Duncan, J. B., Bedford.
Emery, Charles H., Bedford.
Freeland, John T., Bedford.
Gibbons, G. L., Huron.
Gibbons, J. A., Mitchell.
Hornocker, S. D., Silverville.
Hunter, F. S., Bedford.

Kelly, J. C., Mitchell.
McDonald, A. J., Bedford.
McFarlan, Jno. T., Williams.
Mitchell, E. E., Avoca.
Pearson, J. R., Bedford.
Perkins, E. L., Oolitic.
Rariden, C. E., Bedford.
Sherwood, W. C., Mitchell.
Short, R. B., Bedford.
Shrum, Riley, Bedford.
Smith, S. W., Leesville.
Smith, W. H., Bedford.
Stipp, F. E., Bedford.
Voyles, H., Bedford.
Walls, G. W., Mitchell.
White, G. W., Mitchell.
Woolery, P., Heltonville.

REMOVED.

Jackson, Cloud M., Springville.

MADISON COUNTY.

OFFICERS.

T. O. Armfield, President.
Lee Hunt, Vice-Pres.
M. A. Austin, Sec.-Treas.
Etta Charles, Delegate.

CENSORS.

B. H. Cook.
J. W. Cook.
W. A. Boyden.

MEMBERS.

Alexander, L. E., Pendleton.
Armington, J. C., Anderson.
Armfield, J. D., Elwood.
Armfield, T. O., Elwood.
Austin, M. A., Anderson.
Austin, Wisner, Summitville.
Boram, E. V., Anderson.
Boyden, W. A., Anderson.
Brownback, O. W., Pendleton.
Charles, Etta, Summitville.
Chittenden, E. W., Anderson.
Collins, A. W., Anderson.
Conrad, E. M., Anderson.
Cook, B. H., Anderson.
Cook, J. W., Pendleton.
Cotton, C. C., Elwood.
Coverston, J. W., Frankton.
Crismond, J. W., Anderson.
Druley, O. E., Anderson.
Eshelman, W. A., Anderson.
Fairfield, W. J., Anderson.
Fattic, J. B., Anderson.
Fisher, J. M., Lapel.
Garretson, W. M., Perkinsville.
Gibson, J. J., Alexandria.
Hall, J. E., Alexandria.
Harter, J. H., Anderson.
Harter, W. P., Anderson.
Hunt, Lee F., Anderson.
Jones, H. E., Anderson.
Jones, T. M., Anderson.
Kellar, F. G., Alexandria.
Kneale, W. W., Anderson.
Leib, Alfa, Anderson.
Long, A. J., Anderson.
Longanecker, E. W., Anderson.
McWilliams, O. E., Anderson.
Manring, N. H., Elwood.
Meiner, J. A., Alexandria.
Mendenhall, F. F., Elwood.
Merson, U. H., Anderson.
Miley, I., Anderson.
Mobley, Lewis F., Summitville.
Newlin, S. C., Anderson.
Norris, S. C., Anderson.
O'Neill, Thos., Anderson.
Otto, A. E., Alexandria.
Perce, B. H., Anderson.
Ploughe, M. L., Elwood.
Quickel, D. S., Anderson.
Runyan, C. P., Elwood.
Rush, M. A., Anderson.

Saunders, Jos., Anderson.
Stephenson, T. J., Lapel.
Stewart, Jonas, Anderson.
Stoddard, J. M., Anderson.
Terrill, L. B., Anderson.
Tobias, A. W., Elwood.
Walser, J. A., Anderson.
White, J. W., Summitville.
Whitledge, G. A., Anderson.
Williams, C. F., Anderson.
Williams, L. O., Anderson.
Wood, N. S., Anderson.

HONORARY.

Chittenden, G. F., Anderson.

REMOVED.

Cullipher, J. E., Pendleton.
Suttner, C. N., Elwood.
Trueblood, Charles, Anderson.
Ulmer, D. R., Alexandria.

SUSPENDED.

Conway, C. E., Perkinsville.
Marshall, R. E., Elwood.

INDIANAPOLIS (MARION COUNTY) MEDICAL SOCIETY.

OFFICERS.

J. H. Oliver, President.
J. H. Taylor, Vice-Pres.
W. C. White, Secretary.
J. T. Scott, Treasurer.
O. G. Pfaff, T. B. Noble, Del.

CENSORS.

H. O. Pantzer.
A. C. Kimberlin.
A. W. Brayton.
A. L. Wilson.
L. C. Cline.
Thos. B. Eastman.

MEMBERS.

Alexander, Joseph C., 219 N. Claypool Bldg.
Allen, Horace R., 1320 N. Del.
Allen, Wesley, West Newton.
Amos, Edw. M., 3304 N. Illinois.
Bahr, Max A., Central Insane Hospital.
Barnes, Arthur L., Southport.
Barnhill, John F., 323 N. Delaware.
Bates, J. M., Broad Ripple.
Beck, Herman A., 18 W. Market.
Beck, Wm. S., 18 W. Market.
Beckman, Henry F., 615 S. Noble.
Bell, Guido, 431 E. Ohio.
Berauer, J. M., 1353 Madison.
Berner, Louis E., 949 Prospect.
Bird, Chas. R., 2128 Central.
Bower, John V., Millersville.
Brayton, A. W., 330 N. Claypool Bldg.
Brayton, Nelson D., 330 N. Claypool Bldg.
Brill, James H., 608 N. New Jersey.
Brown, Benj. A., 3712 E. 25th.
Brown, Ed. A., 1066 Virginia.
Burckhardt, Louis, 33 Willoughby Bldg.
Cain, Joseph D., 1518 E. Wash.
Canfield, Benton V., 207 E. New York.
Carson, L. O., Trader's Point.
Chamberlin, Cameron, 3307 E. 10th.
Chappell, R. S., 229 E. Sixteenth.
Charlton, F. R., 23 Willoughby Bldg.
Christian, Wilmer, 532 N. Claypool Bldg.
Clark, Edmund D., 407 N. Claypool Bldg.
Clevenger, Wm. F., 229 N. Penn.
Cline, Lewis C., 20 Willoughby Bldg.
Cole, A. M., 401 N. Claypool Bldg.
Conger, Chas. W., 865 Mass. ave.
Cook, Chas. J., 598 N. Keystone.

Cook, George J., 28 Willoughby Bldg.
Cottingham, Chas. E., 216 Newton Claypool Bldg.
Courtney, Thomas E., 533 E. South.
Crose, Samuel E., 219 W. Wash.
Cunningham, Jno., 2225 N. Illinois.
Davis, John Q., 37 Willoughby Bldg
DeHass, T. W., 8 McLean Place.
Denson, H. A., 308 Van Vorhis Bldg.
DeVaney, Mitchell O., 522 Parkway.
Dodds, W. T. S., 342 N. Claypool Bldg.
Dorsey, Francis O., 212 N. Claypool Bldg.
Dubois, E. J., 111 W. St. Clair.
Dunlavy, I. E., 1735 College.
Dunning, L. H.,* 37 Willoughby Bldg.
Dugan, Thomas J., 2520 W. Wash.
Durham, C. O., 602 S. Illinois.
Earp, Samuel E., 24½ Kentucky.
Eastman, J. Rilus, 331 N. Del.
Eastman, Thomas B., 331 N. Del.
Edenharter, George F., Central Insane Hospital.
Erdman, Bernhard, 430 N. Claypool Bldg.
Ferguson, C. E., 327 N. Claypool Bldg.
Fletcher, C. I., 713 S. Meridian.
Ford, J. H., 226 N. Claypool Bldg.
Ford, Katherine C., 1111 W. New York.
Foreman, William H., 1716 E. Washington.
Foxworthy, Frank W., 316 North Meridian.
Freeland, John L., 711 Shelby.
Fry, B. C., 401 N. Claypool Bldg.
Furniss, S. A., 132 W. New York.
Gabe, Harry E., 911 Virginia.
Garshweiler, W. P., 160 E. Market.
Garstang, R. W., 226 N. Claypool Bldg.
Gemmill, Harry C., 31st and Northwestern.
Goar, C. S., 1134 S. Meridian.
Garrett, John D., 1733 N. Senate.
Graham, A. B., 27 Willoughby Bldg.
Graham, Hannah M., 11 Marion Block.
Hamer, Homer G., 529 Newton Claypool Bldg.
Haslep, Marie, 43 Willoughby Bldg.
Hays, Franklin W., 247 N. Penn.
Heath, Frederic C., 427 N. Claypool Bldg.
Hoag, W. I., 2625 W. Washington.
Hobbs, Alice L., 217 W. Eleventh.
Hodges, E. F., 2 W. New York.
Hodges, Fletcher, 2 W. New York.
Hood, Thomas C., 316 N. Meridian.
Hoskins, Walter D., 610 Newton Claypool Bldg.
House, G. H. F., 3015 N. Illinois.
House, John W., 2304 Talbott.
Hughes, William F., 950 S. Meridian.
Hurty, John N., State House.
Hutchins, F. F., 809 N. Alabama.
Jaeger, A. S., 433 N. Claypool Bldg.
Jameson, Henry, 212 N. Claypool Bldg.
Jennings, W. L., Bridgeport.
Jobes, Norman E., 610 N. Claypool Bldg.
Johnson, W. H., Brightwood.
Johnston, S. A., 333 N. Claypool Bldg.
Kahn, David L., 323 N. Delaware.
Keene, T. V., 1222 N. Illinois.
Kennedy, Bernays, 333 N. Claypool Bldg.
Kimberlin, A. C., 47 Willoughby Bldg.
Kiser, Edgar F., 107 E. 22d.
Knabe, Helene, 1151 Bates.
Knox, E. S., 1404 Hoyt.
Kolmer, John, 17 W. Ohio.
Kyle, John J., 226 N. Claypool Bldg.

Langdon, Harry K., 2454 Central.
Layman, Daniel W., 308 N. Claypool Bldg.
Leathers, D. A., 1017 College.
Lee, Geo. W. H., 2404 N. Illinois.
Leonard, Henry S., 1203 E. Nineteenth.
Link, Goethe, 743 Virginia.
Link, William H., 743 Virginia.
Little, Chas. S., 944 Ft. Wayne.
Lohrman, Henry, 427 N. Claypool Bldg.
Long, John B., 760 W. New York.
Lukenbill, O. G., 2219 E. Wash.
McAlexander, R. O., 405 E. 16th.
McConnell, Maude W., 902 S. East.
MacDonald, J. A., Central Insane Hospital.
McDonald, W. B., New Augusta.
McKee, J. F., Indianapolis.
McLeay, J. D., 11-12 Masonic Tem.
McShane, John T., 229 N. Penn.
Malpas, S. H., Hume Bldg.
Martin, Paul F., The Willoughby.
Masters, John L., 249 N. Penn.
Maxwell, Allison, 323 N. Delaware.
Medsker, Irwin T., 2618 W. Mich.
Moore, H. A., 318 N. Claypool Bldg.
Morris, John E., 428 E. Nebraska.
Morrison, Frank A., 13 Willoughby Bldg.
Morrow, Joseph E., Van Vorhis Bldg.
Moschell, J. D., Fair Block.
Neier, O. C., 5502 E. Washington.
Neu, Chas F., Insane Hospital.
Noble, Thomas B., 427 N. Claypool Bldg.
O'Dell, Thos. A., 3624 E. 25th.
Oliver, John H., 422 N. Delaware.
Orf, George, Indianapolis.
Outland, Edgar M., 547 N. Claypool
Page, LaFayette, 30 Willoughby Bldg.
Pantzer, Hugo O., 40 Willoughby Bldg.
Payne, J. H., Julietta, Ind.
Pendleton, George, 925 N. West.
Petersdorf, Gustav A., 508 Parkway.
Pettijohn, Fred L., 504 E. 21st.
Pfaff, John, 333 N. Claypool Bldg.
Pfaff, O. G., 333 N. Claypool Bldg.
Pfafflin, Chas. A., 443 N. Claypool Bldg.
Phipps, J. M., Van Vorhis Bldg.
Potter, Theodore, 610 N. Claypool Bldg.
Reed, J. V., The Willoughby.
Reyer, E. C., 311 N. Claypool Bldg.
Ridpath, H. W., 642 E. 16th.
Ritter, C. L., 232 N. Claypool Bldg.
Ritter, R. H., 47 Willoughby Bldg.
Robertson, John F., 2313 E. Mich.
Robinson, W. B., 53 Willoughby Bldg.
Ross, David, 12 Willoughby Bldg.
Row, George S., 401 N. Penn.
Rowe, Louis M., 538 N. Penn.
Schaefer, C. R., 1202 Madison.
Scherer, S. P., 513 N. Delaware.
Schneck, Luella M., 249 N. Penn.
Scott, John T., 634 N. Claypool Bldg.
Seiberth, Jacob, Julietta.
Sharp, Walter N., 408 N. Claypool Bldg.
Shipp, Floyd N., 323 N. Delaware.
Sigler, Geo. A., 347 N. Claypool Bldg.
Sluss, J. W., 216 N. Claypool Bldg.
Smith, Martha J., 415 N. Delaware.
Sommer, E. F., 406 N. California.
Sowder, Chas. R., 323 N. Delaware.
Spencer, M. J., 3540 E. Wash.
Spink, Mary A., 1140 E. Market.
Spink, Urbana, 1140 E. Market.
Sterne, A. E., 1820 E. 10th.
Stillson, J. O., 440 N. Pennsylvania.
Stockton, Sarah, Insane Hospital.
Storch, L. A. E., 1342 S. Meridian.
Sutcliffe, John A., 7 Baldwin Bldg.
Taylor, James H., The Chalfant.
Thompson, J. L., 232 N. Illinois.

Thorner, Moses, The Willoughby.
Thurston, H. S., 224 N. Meridian.
Todd, Robt. N., 2117 N. Capitol.
Tomlin, W. S., 320 N. Claypool Bldg.
Torian, O. N., 3002 N. Illinois.
Turner, Harriet E., 401 N. Penn.
Wagner, T. A., 148 N. Delaware.
Wallace, Lew E., 232 N. Illinois.
Ward, A. O., 339 Virginia.
Ward, Clay L., 1475 E. New York.
Ward, Joseph Henry, 437½ Indiana.
Watters, Patrick J., Central Insane Hospital.
Weer, H. H., 12 Willoughby Bldg.
Weil, Harry J., 2103 E. Michigan.
Westover, R. Leland, 509 N. Claypool Bldg.
Wheeler, H. H., 1535 N. Illinois.
Willis, Edw. A., The Chalfant.
Wilson, A. L., 1520 N. Capitol.
Wishard, W. N., 529 N. Claypool Bldg.
Wolferman, A. Gertrude, 433 Va.
Woolen, Green V., 20 W. Ohio.
Woollen, Herbert M., 20 W. Ohio.
Wright, Wm. M., 13 Willoughby Bldg.
Wynn, Frank B., 311 N. Claypool Bldg.
Young, James B., Indianapolis.

HONORARY.

Anthony, James R., Indianapolis.
Avery, J. P., Indianapolis.
Chatard, Rt. Rev. Bishop, Indianapolis.

* Deceased.

Comingor, J. A., Indianapolis.
Ferguson, F. C., Indianapolis.
Field, M. H., Indianapolis.
Fletcher, William B., Indianapolis.
Florer, T. W., Texas.
Furniss, Henry W., Bahia, Brazil.
Hacker, T. S., Indianapolis.
Jameson, P. H., Indianapolis.
Jeffries, William E., Indianapolis.
Kemper, G. W. H., Muncie, Ind.
Kitchen, J. M., Indianapolis.
Lewis, E. R., Washington, D. C.
McNab, P., Indianapolis.
Moore, S. H., Indianapolis.
Patterson, A. W., Indianapolis.
Ryan, W. B., Indianapolis.
Stone, R. F., Indianapolis.
Walling, Willoughby, Chicago.
Waterman, L. D., Indianapolis.
Wishard, W. H., Indianapolis.

REMOVED.

Ballard, Joseph, Vancouver, B. C.
Bird, C. R., Greensburg.
Cunningham, S. R., Lafayette, Ind.
Harvey, J. B., Indianapolis.
McCracken, A. J., Indianapolis.
Newcomb, J. R., Indianapolis.
White, W. C., Indianapolis.

SUSPENDED.

Boersig, Jos. A., 1214 Reisner.
Herbert, L. H., Van Vorhis Block.
Marlatt, C. L., Massachusetts ave.
Pettijohn, O. B., 418 Blake st.
Williams, J. L., N. Claypool Bldg.
Wright, C. E., Indianapolis.

MARSHALL COUNTY.

OFFICERS.

O. A. Rea, President.
R. C. Stephens, Vice-Pres.
S. C. Loring, Secretary.
L. D. Eley, Treasurer.
Novitas B. Aspinall, Delegate.

CENSORS.

A. C. Holtzendorff.
E. E. Parker.
H. H. Tallman.

MEMBERS.

Aspinall, Novitas B., Plymouth.
Borton, T. Artemas, Plymouth.
Eidson, J. W., Bourbon.
Eley, Lorenzo D., Plymouth.
Gould, S. W., Argos.
Holtzendorff, A. C., Plymouth.
Holtzendorff, C. F., Plymouth.
Johnson, Luther, Bourbon.
Knott, D. C., Plymouth.
Loring, S. C., Plymouth.
Nusbaum, C. E., Bremen.
Parker, E. E., Culver.
Preston, H. P., Plymouth.
Radcliffe, F. E., Bourbon.
Rea, O. A., Culver.
Ritchey, Samuel R., Donelson.
Stephens, R. C., Plymouth.
Tallman, H. H., La Paz.
Thompson, A. A., La Paz.
Wahl, G. F., Bremen.
Wiseman, B. W. S., Culver.

REMOVED.

Rea, Robert H., Culver.

SUSPENDED.

Sarber, W. C., Argos.

MARTIN COUNTY.

OFFICERS.

T. N. Braxtan, President.
M. M. Dooley, Vice-Pres.
T. A. Hays, Sec.-Treas.
J. C. Trueblood, Delegate.

CENSORS.

I. N. Plummer.
G. M. Robinson.
J. N. Sims.

MEMBERS.

Braxtan, T. N., Loogootee.
Brittain, S. H.,* Loogootee.
Dollens, T. C., Trinity Springs.
Dooley, M. M., Loogootee.
Gilkison, J. S., Indian Springs.
Hays, T. A., Burns City.
Plummer, I. N., Shoals.
Robinson, G. M., Loogootee.
Shirley, H. W., Shoals.
Sims, J. N., Dover Hill.
Strange, J. W., Loogootee.
Trueblood, J. C., Loogootee.

REMOVED.

Stone, Chas. E., Windom.
Wright, B. C., Indian Springs.

* Deceased.

MIAMI COUNTY.

OFFICERS.

J. E. Yarling, President.
E. H. Griswold, Vice-Pres.
D. C. Ridenour, Secretary.
J. O. Ward, Treasurer.

CENSORS.

Jared Spooner.
J. C. Fretz.
O. U. Carl.

MEMBERS.

Andrews, E. H., Peru.
Bloomfield, E. M., Peru.
Boggs, M. M., Macy.
Carl, O. U., Peru.
Clements, H. J., Converse.
Eikenberry, A. A., Peru.

Foust, P. G., Santa Fe.
Fretz, J. C., Deedsville.
Griswold, E. H., Peru.
Helm, C. J., Peru.
Higgins, J. B., Peru.
Kalbfleisch, A. H., Peru.
Kimball, M. C., Converse.
Kratzer, E. F., Peru.
Ridenour, D. C., Peru.
Smith, A. F., Waupecong.
Spooner, Jared, Peru.
Wainscott, O. C., Peru.
Ward, J. O., Peru.
Yarling, J. E., Peru.

HONORARY.

Moore, Jno. W., Mexico.
Passage, H. V., Peru.
Watkins, F. H., Peru.

SUSPENDED.

Peters, J. B., Macy.

MONROE COUNTY.

OFFICERS.

Fletcher Gardner, President.
F. H. Batman, Sec.-Treas.
C. E. Harris, Delegate.
Fred H. Batman, Alternate.

CENSORS.

O. F. Rogers.
W. N. Culmer.
J. E. Harris.

MEMBERS.

Baker, J. V., Harrodsburg.
Batman, F. H., Bloomington.
Culmer, W. N., Bloomington.
Gardner, Fletcher, Bloomington.
Gardner, Lucy W., Bloomington.
Harris, C. E., Bloomington.
Harris, J. E., Bloomington.
Harris, O. K., Ellettsville.
Harris, W. W., Ellettsville.
Heskett, W. C., Bloomington.
Holland, G. F., Bloomington.
Holland, P. C., Bloomington.
Klein, W. W., Bloomington.
Lowder, Lillian C., Bloomington.
Lowder, L. T., Bloomington.
Luzzadder, J. E., Smithville.
Manwaring, W. H., Bloomington.
Myers, Burton D., Bloomington.
Pohlman, A. G., Bloomington.
Rogers, O. F., Bloomington.
Rogers, R. C., Bloomington.
Ross, J. C., Bloomington.
Schaeffer, G. C., Bloomington.
Simmons, W. D., Clear Creek.
Smith, Thurston, Bloomington.
Stout, O. M., Stanford.
Tourner, F. F., Bloomington.
Tourner, J. P., Bloomington.
Vermilya, J. C., Bloomington.
Whetsell, L. E., Bloomington.
Wiltshire, J. W., Bloomington

MONTGOMERY COUNTY.

OFFICERS.

T. J. Griffith, President.
J. W. Elliott, Vice-Pres.
B. M. Hutchings, Sec.-Treas.
C. H. Walden, Delegate.

CENSORS.

E. H. Cowan.
H. E. Greene.
F. A. Dennis.

MEMBERS.

Allhands, F. D., Wingate.
Ball, T. Z., Waveland.
Barcus, P. J., Crawfordsville.
Batman, W. F., Ladoga.
Beatty, J. L., Crawfordsville.
Bounnell, H. M., Waynetown.
Brown, A. L., Alamo.
Clements, G. E., Crawfordsville.
Cowan, E. H., Crawfordsville.
Davidson, J. F., Crawfordsville.
Dennis, F. A., Crawfordsville.
Elliott, J. W., Linden.
Ensminger, S. L., Crawfordsville.
Etter, J. R., Crawfordsville.
Girard, R. H., Crawfordsville.
Greene, H. E., Crawfordsville.
Griffith, J. B., Alamo.
Griffith, M. E. H., Crawfordsville.
Griffith, T. J., Crawfordsville.
Hamilton, A. N., Waynetown.
Hutchings, B. F., Crawfordsville.
Hutchings, B. M., Crawfordsville.
Jones, O. H., Crawfordsville.
Keegan, E. W., Crawfordsville.
King, R. F., New Ross.
Peacock, S. R., Ladoga.
Price, E. O., Ladoga.
Ristine, W. H., Crawfordsville.
Shonkwiler, F. M., New Market.
Sigmond, H. W., Crawfordsville.
Swope, A. A., Crawfordsville.
Vancleave, W. E., New Market.
Walden, C. H., New Market.
West, B. F., Singapore Straits Settlement.
Williams, G. T., Crawfordsville.
Wolfe, J. P., New Market.

SUSPENDED.

Lidikay, E. C., Ladoga.

WITHDRAWN.

Niven, J. S., Crawfordsville.

MORGAN COUNTY.

OFFICERS.

D. P. Kennedy President.
A. S. Brown, Vice-Pres.
A. S. Tilford, Sec.-Treas.
E. M. Sweet, Delegate.

CENSORS.

H. C. Robinson.
F. R. Maxwell.
John Kennedy.

MEMBERS.

Brackney, M. F., Mooresville.
Breedlove, Geo. B., Brooklyn.
Brown, A. S., Paragon.
Gravis, C. M., Martinsville.
Green, E. V., Martinsville.
Hendricks, W. E., Martinsville.
Henson, Theodore, Martinsville.
Kennedy, D. P., Martinsville.
Kennedy, John, Paragon.
Magenheimer, V. A., Waverly.
Maxwell, F. R., Martinsville.
Monical, G. S., Martinsville.
Robinson, F. C., Martinsville.
Robinson, H. C., Martinsville.
Sandy, W. J., Martinsville.
Seaton, Chas., Martinsville.
Spoor, J. S., Brooklyn.
Sweet, E. M., Martinsville.
Sweet, Otis, Martinsville.
Tilford, A. S., Martinsville.

REMOVED.

Hartsock, W. B., Waverly.
Hibbs, Irwin, Martinsville.
Lindley, C. M., Brooklyn.
Seaton, Guy, Martinsville.

NOBLE COUNTY.

OFFICERS.

J. Hamilton Nye, President.
J. L. Gilbert, Vice-Pres.
W. F. Carver, Sec.-Treas.
J. W. Hays, Delegate.

CENSORS.

J. W. Hays.
N. J. Shook.
W. K. Mitchell.

MEMBERS.

Black, F. W., Ligonier.
Bowker, J. J., LaOtto.
Carver, W. F., Albion.
Depew, E. W., Wolf Lake.
Franks, O. P., Brimfield.
Franks, W. H., Ligonier.
Gardiner, C. A., Kendallville.
Gilbert, Joseph L., Kendallville.
Goodwin, C. B., Kendallville.
Greene, Thomas C., Albion.
Greene, W. T., Albion.
Hayes, John W., Albion.
Johnson, W. A., Wawaka.
King, H. O., Kendallville.
Lake, G. B., Wolcottville.
Lemmon, S. W., Albion.
Luckey, J. E., Wolf Lake.
Maloney, F. C., Avilla.
Miller, B. E., Albion.
Mitchell, W. K., Ligonier.
Morr, J. W., Albion.
Nye, J. H., Cromwell.
Seymoure, C. A., Wawaka.
Shaw, S. L., Kimmell.
Shobe, W. A., Ligonier.
Shook, N. J., Kendallville.
Teal, Geo. A., Kendallville.
Tucker, H. G., Cromwell.
Veazey, W. M., Avilla.
Williams, W. A., Kendallville.
Woodruff, C. A., Ligonier.

REMOVED.

Clapp, Fred R., Ligonier.

ORANGE COUNTY.

OFFICERS.

Schuyler F. Teaford, Pres.
W. W. Sloan, Vice-Pres.
R. E. Baker, Sec.-Treas.
S. F. Teaford, Delegate.

CENSORS.

C. E. Boyd.
J. I. Maris.
J. R. Dillinger.

MEMBERS.

Baker, R. E., Orleans.
Boyd, C. E., West Baden.
Boyd, C. L., Paoli.
Dillinger, J. R., French Lick.
Dowden, Charles W., West Baden.
Hasselmiller, Mort, West Baden.
Hoggatt, W. W., French Lick.
Howard, J. L., West Baden.
Hunt, F. P., Leipsic.
Kahlo, George D., French Lick.
Lindley, Laban, Paoli.
Lingle, S. L., Paoli.
McFarland, C. C., Abydell.
Maris, J. I., Paoli.
Moyer, George D., Parsons, Kan.
Patton, W. H., Orleans.
Reynolds, Arthur R., Chicago, Ill.
Ritter, H. O., Orangeville.
Ritter, T. B., Orleans.
Sloan, W. W., French Lick.
Stewart, O. H., Orleans.
Teaford, S. F., Paoli.

REMOVED.

Laughlin, E. D., Orleans.

SUSPENDED.

Hazelwood, Green, Chambersburg.
Lindenbeger, Irwin, French Lick.
Tolliver, J. A., French Lick.

OWEN COUNTY.

OFFICERS.

Nathaniel D. Cox, President.
Albert C. Kennedy, Vice-Pres.
Allen Pierson, Sec.-Treas.
Jacob Coble, Delegate.

CENSORS.

Thos. Gantz.
Ralph R. Coble.
Albert H. Spears.

MEMBERS.

Chenoweth, E. B., Quincy.
Coble, Jacob, Spencer.
Coble, Ralph R., Spencer.
Cox, Nathaniel D., Spencer.
Davis, William M., Coal City.
Fox, Henry A., Gosport.
Gantz, Thomas, Freedom.
Hazel, James T., Freedom.
Holtzman, Rice C., Stinesville.
Jones, Jesse M., Cataract.
Kennedy, Albert C., Patricksburg.
McDonald, David H., Quincy.
Maddox, W. B. S., Vandalia.
Osgood, Howard G., Gosport.
Pierson, Allen, Spencer.
Richards, Renos H., Patricksburg.
Richards, Samuel D., Patricksburg.
Sloan, John N., Spencer.
Spear, Albert H., Spencer.
Stucky, Frederick V., Gosport.
Stucky, John M., Gosport.
White, Claudius H., Cataract.
Wiles, Frank M., Indianapolis.
Willoughby, George E., Gosport.
Yocum, Boaz, Coal City.

REMOVED.

Fisher, Benjamin T., Spencer.
Pritchard, Caleb A., Gosport.

PERRY COUNTY.

OFFICERS.

M. W. Rothrock, President.
C. E. Cox, Vice-Pres.
C. M. Brucker, Sec.-Treas.
Wm. Muelchi, Delegate.

CENSORS.

Wm. H. Muelchi.
E. R. Snyder.
William Cluthe.

MEMBERS.

Allenbaugh, E. E., Huff.
Brucker, C. M., Tell City.
Cluthe, Wm., Tell City.
Cox, C. E., Cannelton.
Muelchi, Wm. H., Tell City.
Rothrock, M. W., Tell City.
Schriefer, J. H., Mosby.
Snyder, E. R., Troy.
Taylor, J. E., Leopold.

REMOVED.

Hendershot, C. T., Cannelton.
Mason, Chas. H., Tell City.

PIKE COUNTY.

OFFICERS.

H. F. Bailey, President.
J. W. Coleman, Vice-Pres.
E. S. Imel, Sec.-Treas.

CENSORS.

J. T. Kime.
T. W. Basinger.
W. M. Hunter.

MEMBERS.

Abbott, Clarence, Otwell.
Bailey, H. F., Hosmer.
Basinger, T. W., Petersburg.
Bethel, W. J., Winslow.
Byers, O. A., Petersburg.
Coleman, J. W., Petersburg.
Hunter, W. M., Petersburg.
Imel, E. S., Petersburg.
Ireland, G. L., Winslow.
Kime, J. T., Petersburg.
Logan, A. R., Algiers.

SUSPENDED.

DeTar, Geo. B., Winslow.
Robinson, Michael, Glezen.

PORTER COUNTY.

OFFICERS.

S. J. Young, President.
Arthur Dobbins, Vice-Pres.
Horace M. Evans, Sec.-Treas.
D. J. Loring, Delegate.

CENSORS.

E. J. Ball.
R. D. Blount.
J. C. Carson.

MEMBERS.

Ball, E. J., Valparaiso.
Blount, R. D., Valparaiso.
Carson, J. C., Valparaiso.
Dobbins, A. O., Wheeler.
Evans, H. M., Valparaiso.
Howerth, Cora, Valparaiso.
Letherman, A. P., Valparaiso.
Loring, D. J., Valparaiso.
Noland, P. D., Kouts.
Powell, E. H., Valparaiso.
Short, R. B., Union Mills.
Urmston, Paul R., Valparaiso.
Wiltfong, C. O., Chesterton.
Yohn, E. F.,* Valparaiso.
Young, S. J., Valparaiso.

REMOVED.

Cone, Edmond, Valparaiso.

SUSPENDED.

Kelley, J. N., Westville.
Warren, C. L., Chesterton.

* Deceased.

POSEY COUNTY.

OFFICERS.

G. C. Smith, President.
Claud Rawlings, Vice-Pres.
F. L. Stallings, Sec.-Treas.
J. E. Doerr, Delegate.

CENSORS.

R. M. Stormont.
U. G. Whiting.
C. Hicks.

MEMBERS.

Arburn, Chas., Wadesville.
Barrett, C. B., Oliver.
Boren, S. W., Poseyville.
Cox, J. B., Bufkin.
Cremeans, W. C., Farmersville.
Doerr, J. E., Mt. Vernon.
Emmick, F. C., Mt. Vernon.
Flucks, Carl, St. Wendell.
Fullenwider, C. H., Mt. Vernon.
Glaze, J. M., New Harmony.

Grim, Simon, Caborns.
Gudgel, J. E., Cynthiana.
Hall, T. J., Mt. Vernon.
Hardwick, L. L., Mt. Vernon.
Henderson, Samuel, St. Phillips.
Hensler, Ernest C., Howell R. R.
Hicks, C., Mt. Vernon.
Holton, Wm., New Harmony.
Montgomery, S. B., Cynthiana.
Murphy, N. W., Stewartsville.
Petitjean, J. W., St. Wendell.
Ramsey, D. C., Mt. Vernon.
Rawlings, C. L., New Harmony.
Rawlings, S. O., New Harmony.
Runcie, G. W., Poseyville.
Smith, G. C., Poseyville.
Stallings, F. L., Caborns.
Stormont, R. M., Stewartsville.
Sugg, H. H., Mt. Vernon.
Welch, D. W., Mt. Vernon.
Whiting, U. G., New Harmony.
Wilson, T. W., New Harmony.

REMOVED.

Lockhart, T. L., New Harmony.

SUSPENDED.

Cosby, L. B., Cynthiana.
Rutter, John, Cynthiana.
Turman, J. I. S., Cynthiana.

PULASKI COUNTY.

OFFICERS.

William Kelsey, President.
G. W. Thompson, Vice-Pres.
C. W. Moss, Sec.-Treas.
W. H. Thompson, Delegate.

CENSORS.

J. J. Thomas.
Jay Jones.
H. C. Stevens.

MEMBERS.

Hackley, R. P., Medaryville.
Jones, Jay, Medaryville.
Kelsey, A. J., Monterey.
Kelsey, W. E., Monterey.
Kelsey, William, Monterey.
Moss, C. W., Winamac.
Moss, D. F., Winamac.
Stevens, H. C., Star City.
Thomas, J. J., Winamac.
Thomas, R. F., Winamac.
Thompson, G. W., Winamac.
Thompson, W. H., Winamac.
Washburn, G. W., Star City.

PUTNAM COUNTY.

OFFICERS.

Eugene Hawkins, President.
C. N. Stroube, Vice-Pres.
J. V. Bastin, Secretary .
L. M. Hanna, Treasurer.

CENSORS.

W. R. Hutchinson.
C. C. Collins.
C. N. Stroube.

MEMBERS.

Bastin, J. V., Greencastle.
Collins, C. C., Roachdale.
Cully, John F., Bainbridge.
Evans, E. B., Greencastle.
Gillespie, J. F., Greencastle.
Hanna, L. M., Greencastle.
Hawkins, E., Greencastle.
Hope, C. F., Coatsville.

Horn, A. H., Putnamville.
Hurst, E. M., Cloverdale.
Hutcheson, W. R., Greencastle.
King, J. M., Greencastle.
McGaughey, Wm., Greencastle.
Mercer, O. P., Reelsville.
Mullinix, P., Greencastle.
New, F. N., Barnard.
Preston, J. L., Greencastle.
Stroube, C. N., Roachdale.
Tucker, W. W., Greencastle.
Zaring, C. T., Greencastle.

REMOVED.

Fulkerson, C. D., Belle Union.

RANDOLPH COUNTY.

OFFICERS.

Grant C. Markle, President.
James S. Blair, Vice-Pres.
Charles L. Botkin, Sec.-Treas.

CENSORS.

B. S. Hunt.
Delena S. Wiggins.
James H. Moroney.

MEMBERS.

Able, O. E., Modoc.
Blair, J. S., Lynn.
Botkin, Charles L., Farmland.
Chenoweth, F. A., Winchester.
Chenoweth, N. T., Parker.
Coffin, A., Carlos City.
Cox, C. R., Lynn.
Cromer, L. G., Union City.
Cromer, Mary, Union City.
Current, O. E., Farmland.
Davis, L. N., Farmland.
Evans, Caleb S., Union City.
Evans, J. J., Winchester.
Hunt, B. S., Winchester.
Markle, G. C., Winchester.
Milligan, Chas. E., Winchester.
Moroney, J. H., Winchester.
Nixon, John, Farmland.
Nixon, J. E., Ridgeville.
Reynard, E. G., Union City.
Reynard, G., Union City.
Rine, E. W., Winchester.
Rogers, A. G., Parker.
Root, Wm. W., Parker.
Ruby, F. McK., Union City.
Shaddy, Elmer D., Saratoga.
Spitler, Chas. E., Saraotga.
Wiggins, D. S., Losantville.

SUSPENDED.

Hinshaw, Otis W., Lynn.

RIPLEY COUNTY.

MEMBERS.

Cox, J. G., Holton.
Freeman, E. D., Osgood.
Hess, J. N., New Marion.
Jones, J. G., Versailles.
Olmsted, R. T., Versailles.
Pate, J. R., Milan.
Pinkston, J. N., Milan.
Townsend, R. C., Osgood.

SUSPENDED.

Beckett, G. T., Versailles.
Cox, L. T., Napoleon.
Forester, Dr., Delaware.
Hunter, T. E., Versailles.
Miller, Albert, Holton.

RUSH COUNTY.

OFFICERS.

J. F. Bowen, President.
F. H. Green, Vice-President.
W. S. Coleman, Sec.-Treas.
W. C. Smith, Delegate.

CENSORS.

J. A. Sipe.
J. T. Paxton.
D. D. Van Osdol.

MEMBERS.

Blount, R. T., Homer.
Bowen, J. F., Rushville.
Coleman, W. S., Rushville.
Cregor, F. W., Carthage.
Elliott, H. H., Glenwood.
Green, F. H., Rushville.
Hackleman, F. G., Rushville.
Hougland, C. S., Milroy.
Hudelson, L. R.,* Milroy.
Logan, H. V., New Salem.
Metcalf, H. P., Andersonville.
Parsons, C. H., Rushville.
Paxton, J. T., Glenwood.
Rea, C. S., Falmouth.
Sexton, J. C., Rushville.
Sipe, J. A., Carthage.
Smith, I. F., Arlington.
Smith, W. C., Rushville.
Smith, W. H., Rushville.
Thomas, S. C., Milroy.
VanOsdol, D. D., Rushville.
Wooden, E. I., Rushville.

* Deceased.

ST. JOSEPH COUNTY.

OFFICERS.

E. J. Lent, President.
L. Proudfit, Vice-Pres.
H. F. Mitchell, Secretary .
C. M. Butterworth, Treasurer.
J. W. Hill, Delegate.

CENSORS.

J. W. Hill.
C. C. Terry.
Charles Stoltz.

MEMBERS.

Barber, A. E., South Bend.
Berteling, J. B., South Bend.
Borley, E. R., South Bend.
Borley, W. E., Mishawaka.
Bosenburg, C., South Bend.
Boyd-Snee, H., South Bend.
Brown, J. R., Sumption Prairie.
Butterworth, C. M., South Bend.
Cannon, J. H., South Bend.
Clark, S. A., South Bend.
Crumpacker, C. D., South Bend.
Daugherty, C. A., South Bend.
Dean, E. R., South Bend.
Dresch, C. A., Mishawaka.
Dugdale, R. B., South Bend.
Eastman, F. P., South Bend.
Epperson, Adah, South Bend.
Fink, H. A., South Bend.
Galloway, U. G., South Bend.
Gilbrech, A. H., Lakeville.
Greene, J. B., Mishawaka.
Hager, W. A., South Bend.
Hansel, C. A., South Bend.
Hill, J. W., South Bend.
Kaple, J. D., South Bend.
Lent, E. J., South Bend.
Lockwood, F. W., South Bend.
McNamara, D. W., South Bend.
Miller, H. M., South Bend.
Mills, W. F., South Bend.
Miranda, W. F., Walkerton.
Mitchell, H. F., South Bend.

Montgomery, H. T., South Bend.
Moore, E. P., South Bend.
Olney, T. A., South Bend.
Peck, Walter M., South Bend.
Proudfit, Louis, Osceola.
Rennoe, C. A., South Bend.
Rieman, W. H., South Bend.
Sawyer, F. M., South Bend.
Stoltz, Chas., South Bend.
Stroupe, C. C., Mishawaka.
Taylor, Chas. E., South Bend.
Terry, C. C., South Bend.
Urquhart, R. T., South Bend.
Van Pelt, R. T., South Bend.
Varier, J. A., South Bend.
Von Barandy, Oscar, South Bend.
Wegner, W. G., South Bend.
Wickham, W. A. R., South Bend.
Wood, W. F., Mishawaka.

SUSPENDED.

Burr, T. S., South Bend.
Darling, E. S., North Liberty.
Holtzendorff, H. C., Mishawaka.
Hewitt, H. S., Mishawaka.
Milligan, J. W., South Bend.
Seaman, J. B., Osceola.
Seymour, Theo. F., Mishawaka.
Warster, Wm. H., North Liberty.

SCOTT COUNTY.

OFFICERS.

Levi McClain, President.
T. H. Close, Vice-President.
T. E. Biery, Sec.-Treas.

CENSORS.

Geo. F. Cline.
A. J. Sarver.
O. C. Murphy.

MEMBERS.

Biery, T. E., Scottsburg.
Cline, Geo. F., Scottsburg.
Close, T. H., Scottsburg.
Hawn, C. E., Little York.
Kendall, Arnold P., Scottsburg.
Lothrop, A. H., Lexington.
McClain, Levi M., Scottsburg.
McClain, W. L., Scottsburg.
Murphy, O. C., Scottsburg.
Sarver, J. A., Scottsburg.
Wilson, J. P., Blocher.

SHELBY COUNTY.

OFFICERS.

G. I. Inlow, President.
J. W. Bowlby, Vice-Pres.
W. H. Kennedy, Sec.-Treas.
Frank Campbell, Delegate.

MEMBERS.

Bass, Frank, Gwynneville.
Boone, B. H., Boggstown.
Bowlby, J. W., Shelbyville.
Campbell, Frank, Shelbyville.
Carter, Laura, Shelbyville.
Connelly, H. M., Shelbyville.
Drake, Morris, Shelbyville.
Green, T. G., Shelbyville.
Inlow, G. L., Blue Ridge.
Inlow, I. W., Blue Ridge.
Keeling, J. E., Waldron.
Keeney, B. G., Shelbyville.
Kennedy, Samuel, Shelbyville.
Kennedy, T. C., Shelbyville.

Kennedy, W. H., Shelbyville.
McFadden, Walter G., Shelbyville.
Parrish, J. W., Shelbyville.
Patten, V. C., Morristown.
Perry, Chas., Lewis Creek.
Pettigrew, D. A., Flat Rock.
Phares, H. E., Shelbyville.
Randolph, D. F., Waldron.
Ray, Frank E., Shelbyville.
Rubush, T. R., London.
Snider, J. W., Fairland.
Strickler, S. L., Boggstown.

SUSPENDED.

Hess, M. M., Morristown.

SPENCER COUNTY.

OFFICERS.

H. G. Weiss, President.
Eva Buxton, Vice-Pres.
Geo. H. Wetzel, Sec.-Treas:

CENSORS.

O. Baumgaertner.
Eva Buxton.
C. H. Adye.

MEMBERS.

Adye, C. H., Patronville.
Baumgaertner, O. C., Rockport.
Buxton, Eva, Rockport.
Carson, S. L., Lincoln City.
Daily, J. M., Rockport.
Gwaltney, S. P., Christney.
Harter, Harry, Newtonville.
James, N. A., St. Meinrad.
Schweitzer, John J., Santa Claus.
Weiss, H. G., Rockport.
Wetzel, George, Rockport.
White, H. Q., Grandview.

STEUBEN COUNTY.

OFFICERS.

J. F. Cameron, President.
T. B. Williams, Vice-Pres.
W. W. Wood, Sec.-Treas.
H. D. Wood, Delegate.

CENSORS.

P. N. Sutherland.
H. D. Wood.
T. J. Creel.

MEMBERS.

Cameron, J. F., Hamilton.
Creel, T. J., Angola.
Humphreys, F. B., Angola.
Kimmel, A. J., Hudson.
Lane, W. H., Angola.
Ritter, Mary, Angola.
Sutherland, P. N., Angola.
Swantusch, O. H., Metz.
Waller, W. H., Angola.
Wilkinson, J. J., Orland.
Wood, H. D., Angola.
Wood, T. F., Angola.
Wood, W. W., Angola.

SUSPENDED.

Ott, J. E., Ashley.
Williams, T. B., Angola.

SULLIVAN COUNTY.

OFFICERS.

C. F. Briggs, President.
J. B. Maple, Vice-Pres.
E. M. Corbin, Sec.-Treas.
W. N. Thompson, Delegate.

CENSORS.

W. N. Thompson.
J. L. Durham.

MEMBERS.

Allsman, S. J., Pleasantville.
Bedwell, T. S., Dugger.
Bland, H. E., Fairbanks.
Briggs, C. F., Sullivan.
Corbin, E. M., Sullivan.
Coulson, S. B., Jackson Hill.
Crowder, J. R., Sullivan.
Crowder, R. H., Sullivan.
Cushman, A., Graysville.
Deputy, Ernest M., Dugger.
Durham, J. L., Graysville.
Edwards, C. H., Sullivan.
Faith, A. H. Sullivan.
Freeman, Joseph, Sullivan.
Goshorn, Leonard, Hymera.
McConnell, J. E., Carlisle.
Maple, J. B., Shelburn.
Miles, James, Merom.
Neff, J. H., Fairbanks.
Oliphant, J. T., Farmersburg.
Parker, J. J., Merom.
Pirtle, G. W., Carlisle.
Robbins, F. L., Carlisle.
Shanklin, Leslie B., Sullivan.
Thixtun, E. D., Sullivan.
Thompson, W. N., Sullivan.
Thralls, C. U., Hymera.
Thralls, R. T., Hymera.
Vancleave, R. H., Farmersburg.
Walters, C. R., Paxton.
Wrork, J. H., Shelburn.
Yager, E. J., Graysville.

SUSPENDED.

Amerman, C. E., Dugger.
Caffee, A. H., Hymera.
Harper, J. A., Shelburn.
Parker, O. O., Merom.

SWITZERLAND COUNTY.

OFFICERS.

J. P. Ward, President.
J. H. Shadday, Vice-Pres.
L. H. Bear, Sec.-Treas.
J. P. Ward, Delegate.

CENSORS.

Scot Culbertson.
J. W. Smith.
Charles Loomis.

MEMBERS.

Bear, Lowery H., Vevay.
Copeland, R. M., Bennington.
Culbertson, Scot, Vevay.
Douglas, Dilver E., E. Enterprise.
Hayden, David N., Vevay.
Loomis, Chas., Vevay.
Shadday, John H., Vevay.
Smith, J. W., Vevay.
Thiebaud, Hugh M., Vevay.
Ward, Jno. P., Vevay.
Woolen, Levin J., Vevay.

SUSPENDED.

Greenleaf, H. A., Markland.

TIPPECANOE COUNTY.

OFFICERS.

Wm. S. Campbell, President.
Charles B. Kern, Vice-Pres.
Wm. M. Reser, Secretary.
Charles Hupe, Treasurer.

CENSORS.

J. D. Hillis.
George F. Beasley.
Frank B. Thompson.

MEMBERS.

Baker, Erasmus S., West Point.
Baker, Ernest S., Lafayette.
Beasley, Geo. F., Lafayette.
Biddle, Frank M., Battle Ground.
Bitting, A. W., West Lafayette.
Campbell, Robt. M., West Point.
Campbell, W. S., Lafayette.
Davidson, E. C., Lafayette.
Driscoll, C. C., Lafayette.
Hannell, Roy V., Lafayette.
Hillis, J. D., Lafayette.
Hopper, M. S., Lafayette.
Hupe, Chas., Lafayette.
Keiper, George P., Lafayette.
Kern, Chas. B., Lafayette.
Lairy, M. M., Lafayette.
Levering, Guy P., Lafayette.
McMahan, Adah, Lafayette.
Mitchell, Josephine M., Lafayette.
Moffitt, Wm. R., West Lafayette.
Morrison, J. S., Lafayette.
Nesbitt, Wm. S., Dayton.
Peters, W. H., Lafayette.
Reser, Wm. M., Lafayette.
Revis, Geo. F., Lafayette.
Schreiber, A. Th., Lafayette.
Tea, R. S., Lafayette.
Thompson, Frank B., Lafayette.
Throckmorton, G. K., Lafayette.
Tilson, Washburn, Lafayette.
Walker, Wm. S., Lafayette.
Washburn, S. S., Lafayette.
Webster, J. C., Lafayette.
Westfall, A. B., Lafayette.
Wetherill, R. B., Lafayette.
Wilson, M. C., Lafayette.

HONORARY.

Burrage, Prof. S., Lafayette.
Coulter, Prof. S., Lafayette.

REMOVED.

Schulz, Herman S., Lafayette.

RESIGNED.

Lyle, Urban A., Lafayette.

TIPTON COUNTY.

OFFICERS.

W. E. McKee, President.
H. E. Grishaw, Vice-Pres.
A. W. Gifford, Sec.-Treas.

CENSORS.

T. C. Cochran.
E. I. Hinkle.
T. W. Longfellow.

MEMBERS.

Cochran, T. C., Sharpsville.
Cotton, S. M., Goldsmith.
Dickey, A. S., Tipton.
Doan, N. W.,* New Lancaster.
Gifford, A. W., Tipton.
Grishaw, H. E., Tipton.
Hinkle, E. I., Goldsmith.
Hutto, H. W., Sharpsville.
Longfellow, T. W., Tipton.
McKee, W. E., Tipton.
Newcomer, M. V. B., Tipton.
Ploughe, M. T., Kempton.
Read, H. G., Tipton.

* Deceased.

UNION COUNTY.

OFFICERS.

Garrett Pigman, President.
Franklin T. Dubois, Vice-Pres.
E. R. Beard, Sec.-Treas.
H. Hawley, Delegate.

CENSORS.

M. F. Veraker.
H. M. Egolf.

MEMBERS.

Beard, E. R., Liberty.
Dubois, Franklin T., Liberty.
Egolf, H. M., Liberty.
Hawley, W. H., College Corner.
Pigman, Garrett, Liberty.
Veraker, M. F., Liberty.

SUSPENDED.

Kell, S. D., Liberty.
Morris, J. E., Liberty.

VANDERBURGH COUNTY.

OFFICERS.

J. N. Baughman, President.
M. Ravdin, Vice-Pres.
W. R. Davidson, Sec.-Treas.
Edwin Walker, Delegate.

CENSORS.

B. W. L. Floyd.
Edwin Walker.
G. W. Varner.

MEMBERS.

Achilles, F. W.,* Evansville.
Bacon, C. P., Evansville.
Baughman, J. N., Evansville.
Begley, B. W., Inglefield.
Berger, E. V., Howell.
Binkley, J. F., Evansville.
Bitz, L. B., Evansville.
Boyden, C. F., Evansville.
Brose, L. D., Evansville.
Bruning, Louise, Evansville.
Bryan, T. L., Evansville.
Busse, E. P., Evansville.
Cain, D. B., Evansville.
Cleveland, W. F., Evansville.
Coleman, W. H., Evansville.
Cottingham, I. E., Evansville.
Cox, D. A., Howell.
Davidson, W. R., Evansville.
Davis, F. L., Evansville.
Dixon, H. F., Evansville.
Duddenhausen, W. C., Evansville.
Eichel, S. J., Evansville.
Field, W. H., Evansville.
Floyd, B. W. L., Evansville.
Frick, H. C., Evansville.
Fritsch, L. J., Evansville.
Fritsch, W. A., Evansville.
Gilbert, W. H., Evansville.
Glover, J. F., Evansville.
Greenleaf, G. F., Evansville.
Harpole, C. B., Evansville.
Hartloff, C. W., Evansville.
Hayden, A. M., Evansville.
Heberer, J. M., Evansville.
Heimann, L., Evansville.
Hodson, G. P., Evansville.
Huber, J. G., Evansville.
Hudson, M. D., Evansville.
Ingle, C. V., Evansville.
Jerome, J. N., Evansville.
Jones, Geo. E., Evansville.
Kelsay, C., Evansville.
Kerth, J. H., Evansville.
Knapp, A. J., Evansville.
Knapp, B. J., Evansville.
Knapp, Chas., Evansville.
Laubscher, S. J., Evansville, R. R.
Laughlin, C. E., Evansville.
Laval, W. J., Evansville.
Linthicum, E., Evansville.
Lorenz, J. W., Evansville.
McClurkin, J. C., Evansville.
McCool, H. F., Evansville.
McCool, W. E., Evansville.
McCoy, P. Y., Evansville.
McCutchan, J. H., Evansville.
Macer, Thos., Evansville.
Neuneker, H. E., Evansville.
Owen, J. E.,* Evansville.
Phares, J. W., Evansville.

Pollard, W. S., Evansville.
Pritchett, W. S., Evansville.
Ravdin, M., Evansville.
Reavis, W. J., Evansville.
Rietz, P. C., Evansville.
Rose, B. S., Evansville.
Sessions, S. K., Evansville.
Stark, J. W., Evansville, R. R.
Taylor, T. H., Evansville.
Tepe, G. W., Evansville.
Thomas, James, Evansville.
Tweedall, D. G., Evansville.
Varner, G. W., Evansville.
Varner, W. T., Evansville.
Verwayne, E. J., Evansville.
Viehe, C. G., Evansville.
Viehe, C. H., Evansville.
Walker, Edwin, Evansville.
Warter, Philip, Evansville.
Weever, J. B., Evansville.
Welborn, J. Y., Evansville.
Willis, J. H., Evansville.
Wilton, I., Evansville.
Witting, A. P., Evansville.
Woods, W. P., Evansville.
Worsham, L., Evansville.
Young, G. M., Evansville.

HONORARY.

Day, B. J.,* Evansville.
Muhlhausen, M., Evansville.
Ralston, W. G., Evansville.
Schuyler, P. L., Evansville.

REMOVED

Wertz, T., Evansville.

*Deceased.

VERMILLION COUNTY.

OFFICERS.

M. L. Hall, President.
W. P. Darroch, Vice-Pres.
O. M. Keyes, Sec.-Treas.
I. M. Casebeer, Delegate.

CENSORS.

Paul H. Keyes.
I. M. Casebeer.
S. C. Darroch.

MEMBERS.

Casebeer, I. M., Newport.
Darroch, S. C., Cayuga.
Darroch, W. P., Cayuga.
Hall, M. L., Newport.
Keyes, O. M., Dana.
Keyes, P. H., Dana.
Newhouse, O. A., Hillsdale.
Newton, J. T., St. Bernice.
Tucker, G. W., Dana.
Wallace, Jas., Newport.

VIGO COUNTY.

OFFICERS.

M. R. Combs, President.
L. P. Luckett, Vice-Pres.
J. R. Yung, Sec.-Treas.
T. C. Slunkard, Delegate.

CENSORS.

W. R. Mattox.
M. A. Boor.
James McCall.

MEMBERS.

Aikman, A. E.,* Clinton.
Ashley, C. W., Clinton.
Bell, W. E., Terre Haute.
Belt, Richard, West Terre Haute.
Bernheimer, H. L., Terre Haute.
Bohn, J. C., Terre Haute.
Boor, M. A., Terre Haute.
Breaks, L. Z., Terre Haute.

Brown, T. F., Sanford.
Brunker, Jas., Riley.
Cabell, A. L., Terre Haute.
Caffee, A. H., Terre Haute.
Caffee, B. V., Terre Haute.
Carmichael, C. S., Seelyville.
Combs, C. N. Terre Haute.
Combs, M. R., Terre Haute.
Cooper, J. A., Terre Haute.
Crapo, G. W., Terre Haute.
Crapo, John R.,* Terre Haute.
Donnelly, J. E., Terre Haute.
Drake, Jas. F., Youngstown.
DuPuy, Chas., Riley.
Elliott, James, Terre Haute.
English, J. P., Terre Haute.
Fink, O. E., Terre Haute.
Fortune, J. L., Terre Haute.
Frisz, Jos., Terre Haute.
Gerrish, W. D., Clinton.
Givens, C. E., Lewis.
Hawkins, Madge P., Terre Haute.
Hebble, D. W., Terre Haute.
Hemphill, F. H., Seelyville.
Hunt, John S., West Terre Haute.
Jenkins, W. O., Terre Haute.
Jett, F. H., Terre Haute.
Knowlton, M., Terre Haute.
La Bier, C. R., Terre Haute.
Larkins, E. L., Terre Haute.
Laughead, J. T., Terre Haute.
Layman, E. W., Terre Haute.
Leavitt, R. H., Terre Haute.
Luckett, L. P., Terre Haute.
McAllister, E. B., Terre Haute.
McCall, James, Terre Haute.
McClain, Leslie, Terre Haute.
McJohnston, W. E., Terre Haute.
Mapes, W. L., Terre Haute.
Mattox, E. L., West Terre Haute.
Mattox, W. R., Terre Haute.
Moorhead, T. W., Terre Haute.
Mullikin, H. M., Terre Haute.
Newhouse, O. A., Hillsdale.
Newton, G. O., Dana.
Niblack, E. S., Terre Haute.
Nichols, John, Atherton.
Nichols, W. E., Terre Haute.
Patton, Chas., Terre Haute.
Ray, C. C., Sanford.
Rice, S. M., Terre Haute.
Schell, Walker, Terre Haute.
Scott, J. B., Terre Haute.
Shaley, F. W., Terre Haute.
Sibley, L. H., Terre Haute.
Smick, C. M., Terre Haute.
Spigler, O. R., Terre Haute.
Stunkard, T. C., Terre Haute.
Tabor, F. A., Terre Haute.
Ulmer, D. R., Terre Haute.
Vancleave, M. B., Terre Haute.
Weinstein, Joseph, Terre Haute.
Weinstein, Leo J., Terre Haute.
Weir, S. D., Terre Haute.
Wiedemann, F. E., Terre Haute.
Willien, L. J., Terre Haute.
Willien, W. F., Terre Haute.
Worrell, J. P., Terre Haute.
Wyeth, Chas., Terre Haute.
Young, S. J., Terre Haute.
Yung, J. R., Terre Haute.

*Deceased.

SUSPENDED.

Neal, E. M., Terre Haute.

WABASH COUNTY.

OFFICERS.

F. S. Kitson, President.
M. E. Renner, Vice-President.
James Wilson, Secretary.
R. F. Blount, Treasurer.
James Wilson, Delegate.

CENSORS.

L. W. Smith.
W. A. Domer.
P. G. Moore.

MEMBERS.

Ader, Henry, Somerset.
Andrews, Miss Leila, N. Manches'r.
Bloomer, F. H., Lagro.
Blount, R. F., Wabash.
Brady, T. R., Wabash.
Brodbeck, Geo. H., Roann.
Dicken, C. L., Lafontaine.
Domer, Walter A., Wabash.
Giffen, R. I., Lagro.
Hale, M. M., Wabash.
Hale, N. T., Wabash.
Hardman, W. E., No. Manchester.
Houser, B. A., Wabash.
Jordan, L. W., Wabash.
Kern, Aaron, Wabash.
King, C. H., Wabash.
Kitson, F. S., North Manchester.
Lower, M. O., North Manchester.
Moore, P. G., Wabash.
Minnich, W. T., Somerset.
Renner, M. E., Urbana.
Rodgers, A. E., Somerset.
Smith, L. F. J., Mrs., Wabash.
Smith, L. W., Wabash.
Stoter, A. E., Wabash.
Thompson, N. H., Wabash.
Wilson, James, Wabash.

SUSPENDED.

Modricker, J. M., Wabash.
Shellhamer, D. C., Wabash.

WARRICK COUNTY.

OFFICERS.

N. M. Spradley, President.
W. H. Mills, Vice-Pres.
E. L. Youngblood, Sec.-Treas.
D. F. De Forest, Delegate.

CENSORS.

Thomas Wright.
J. H. Schuck.
Guy Hoover.

MEMBERS.

Daily, W. W., Stanley.
DeForest, D. A., Boonville.
DeForest, D. F., Boonville.
Folsom, E. M., Boonville.
Ford, W. P., Boonville.
Hewins, W. A., Chandler.
Hoover, Guy, Boonville.
Hoover, P. N., Boonville.
Hunt, W. A., Lynnville.
Keegan, C. J., Chandler.
Kister, George, Elberfield.
Lett, O. A., Newburg.
Mills, W. H., Boonville.
Schuck, John H., Chandler.
Spradley, N. M., Tennyson.
Springston, C. E., Selvin.
Taylor, E. C., Chandler.
Taylor, U. T., Newburg.
Tyner, S. L., Boonville.
West, E. A., Folsomville.
Wilson, Dalton, Yankeetown.
Wilson, W., Yankeetown.
Wright, Thos., Boonville.
Youngblood, E. L., Boonville.

REMOVED.

Mills, Mary, Princeton.
Scales, Harvey, Boonville.

WASHINGTON COUNTY.

OFFICERS.

W. J. Purkhiser, President.
H. C. Hobbs, Vice-Pres.
W. C. Cauble, Sec.-Treas.
W. L. Greene, Delegate.

CENSORS.

R. J. Wilson.
H. C. Hobbs.
C. Spurgeon.

MEMBERS.

Cauble, Wm. C., Salem.
Greene, William L., Pekin.
Hobbs, H. C., Salem.
Purkhiser, W. J., Salem.
Reed, A. A., Salem.
Spurgeon, Cornelius, Salem, R. R. No. 1.
Wilson, R. J., Salem.

SUSPENDED.

Barnett, Otho, Salem.
Bradshaw, A. E., Halo.
Duff, J. F. H., Campbellsburg.
Howard, S. B., Kossuth.
Kelley, Jas. F., Livonia.
Mitchell, J. J., Canton.
Paynter, L. W., Campbellsburg.
Sturdivant, M. G., Chestnut Hill.

WAYNE COUNTY.

OFFICERS.

J. N. Study, President.
T. H. Davis, Vice-Pres.
D. W. Stevenson, Sec.-Treas.

CENSORS.

M. F. Johnston.
Minnie E. Hervey.
H. B. Boyd.

MEMBERS.

Allen, J. B., Cambridge City.
Bond, C. S., Richmond.
Bowers, L. G., Richmond.
Boyd, H. B., Cambridge City.
Bradley, J. T., Abington.
Bramkamp, A. L., Richmond.
Bulla, Joseph M., Richmond.
Bulla, M. S., Richmond.
Clark, J. B., Economy.
Colburn, C. P., Richmond.
Davis, T. H., Richmond.
Dunham, F. H., Richmond.
Ewing, U. B. G., Richmond.
Fouts, J. M., Centerville.
Gabel, H., Centerville.
Gentle, L. M., Milton.
Grant, G. H., Richmond.
Griffis, W. T., Fountain City.
Haughton, R. E., Richmond.
Helm, W. M., Williamsburg.
Hervey, Minnie E., Richmond.
Hopkins, R. R., Richmond.
Huff, O. N., Fountain City.
Huffman, W. G., Richmond.
Jenkins, Jennie, Richmond.
Johnson, P. S., Richmond.
Johnston, M. F., Richmond.
Kienzle, F. W., Greensfork.
King, J. E., Richmond.
Krueger, F. W., Richmond.
Littell, W. R., Cambridge City.
Loop, A. L., Economy.
McKee, C. E., Dublin.
Markley, S. C., Richmond.
Marvel, C., Richmond.
Mauk, J. R., Cambridge City.
Meek, J. B., Richmond.
Meek, M. L., Abington.
Mendenhall, W. O.,* Richmond.
Morrow, S. J., Richmond.
Pierce, R. J., Richmond.
Roark, C. A., Milton.
Schillinger, R., Richmond.
Smith, S. E., Richmond.
Stevenson, D. W., Richmond.
Stotelmyer, C. I., Hagerstown.
Study, J. N., Cambridge City.
Sweeney, I. F., Milton.
Walton, G. F., Dublin.
Wampler, J. M., Richmond.
Weist, H. H., Richmond.
Weller, J. E., Richmond.
Wright, Jacob E., Cambridge City.
Yencer, M. W., Boston.
Young, Franklin, Centerville.

SUSPENDED.

Norrell, J. R., Richmond.

*Deceased.

WELLS COUNTY.

OFFICERS.

Fred Metts, President.
V. S. Cheney, Vice-Pres.
George E. Fulton, Secretary.
L. Mason, Treasurer.
S. A. Shoemaker, Delegate.

CENSORS.

I. N. Hatfield.
M. N. Newman.
J. W. McKinney.

MEMBERS.

Blue, C. L., Tocsin.
Botts, E. H., Zanesville.
Cheney, V. S., Bluffton.
Cook, L. H., Bluffton.
Doster, Hezekiah, Poneto.
Dyer, E. W., Ossian.
Fulton, Geo. E., Bluffton.
Fulton, John C., Bluffton.
Garrett, F. W., Liberty Center.
Goodin, S. A., Bluffton.
Hatfield, I. N., Bluffton.
McKinney, J. W., Bluffton.
Markley, H. W., Petroleum.
Mason, L., Bluffton.
Metts, A. H., Ossian.
Metts, Fred, Ossian.
Metts, J. I., Ossian.
Morris, Thos., Mt. Zion.
Newman, M. N., Ossian.
Redding, J. L., Bluffton, R. R. No. 3
Severin, Louis, Bluffton.
Shoemaker, S. A., Poneto.
Smith, L. W., Liberty Center.
Spaulding, L. A., Bluffton.

WHITE COUNTY.

OFFICERS.

Robt. J. Clark, President.
James L. Carr, Vice-Pres.
A. B. Cray, Sec'y.
M. T. Didlake, Treasurer.
A. B. Cray, Delegate.

CENSORS.

Walter McBeth.
R. M. Reagan.
F. C. Cronk.

MEMBERS.

Carr, James L., Monon.
Clark, J. R., Monticello.
Clayton, Geo. R., Monon.
Cray, Arthur B., Monticello.
Cronk, F. C., Wolcott.
Didlake, M. T., Monticello.
Galbreth, J. P., Burnettsville.
Goodwin, Frank, Monticello.
McBeth, Walter, Burnettsville.
Medaris, John W., Brookston.
Minnick, Horace R., Idaville.
Reagan, R. M., Monon.
Spencer, Wm. A., Wolcott.
Washburn, P. E., Buffalo.

WHITLEY COUNTY.

OFFICERS.

O. V. Schuman, President.
F. G. Grisier, Secretary.
W. F. King, Treasurer.
F. M. Mager, Delegate.
N. I. Kithcart, Alternate.

MEMBERS.

Beach, C. E. C., Coesse.
Eberhard, E. L., South Whitley.
Grisier, F. G., Columbia City.
King, W. F., Columbia City.
Kithcart, N. I., Columbia City.
Linvill, D. G., Columbia City.
Linvill, D. S., Columbia City.
Mager, F. M., Churubusco.
Schuman, O. V., Columbia City.
Scott, J. W. C., Hecla.
Squires, J. W., Churubusco.
Williams, Alice, Columbia City.

ALPHABETICAL LIST OF MEMBERS.

[Names of former members deceased, withdrawn, removed or expelled, are omitted from the list. The Secretary will correct errors upon notification in the next issue.]

Abbott, Clarence, Otwell.
Abell, G. H., Sulphur.
Able, O. E., Trenton.
Acker, M. M., Butler.
Adams, B. O., Eaton.
Adams, F. P., Elkhart.
Adams, Horace E., Harlan.
Adams, S. D., Brewersville.
Adams, Thos. J., North Salem.
Ader, Henry, Somerset.
Adye, C. H., Patronville.
Ainsley, Robert, Indiana Harbor.
Alexander, H. H., Princeton.
Alexander, J. C., Indianapolis.
Alexander, J. H., Greensburg.
Alexander, L. E., Pendleton.
Alexander, W., Frankfort.
Alexander, W. P., Camden.
Allen, Ch. B., Fowler.
Allen, Horace R., Indianapolis.
Allen, J., Charlottesville.
Allen, J. B., Cambridge City.
Allen, Wesley, West Newton.
Allenbaugh, E. E., Huff.
Allhands, F. D., Wingate.
Allred, G. G., Danville.
Allsman, S. J., Pleasantville.
Ambrose, N. C., Lyons Station.
Amiss, J. M., Silver Lake.
Ammerman, C. E., Dugger.
Amos, E. M., Indianapolis.
Amy, W. E., Bicknell.
Anderson, J. W., Odon.
Anderson, R. S., Princeton.
Andrew, V. E., Indianapolis.
Andrews, E. H., Peru.
Andrews, George R., Muncie.
Andrews, J. R., River Vale.
Andrews, Lelia, N. Manchester.
Angell, C. E., Delphi.
Anglin, Geo. W., Warsaw.
Annis, E. L., Laporte.
Arburn, Charles, Wadesville.
Armbruster, B. F., Columbus.
Armfield, J. D., Elwood.
Armfield, T. O., Elwood.
Armington, John, Anderson.
Arthur, H. M., Hazleton.
Arthur, M. L., Washington.
Ash, E. E., Goshen.
Ashley, C. W., Clinton.
Aspinwall, N. B., Plymouth.
Aspy, H. M., Geneva.
Atkinson, Curtis, Oxford.
Atkinson, J. M., Eaton.
Austin, Fred H., North Madison.
Austin, M. A., Anderson.
Austin, Wisner, Summitville.
Axline, J. A., Noblesville.
Aydelotte, Thos., Lyons.

Bacon, C. F., Evansville.
Bacon, V. V., Michigan City.
Bahr, Max A., Indianapolis.
Bailey, H. T., Glezen.
Baker, Erasmus S., West Point.
Baker, Ernest S., Lafayette.
Baker, J. V., Harrodsburg.
Baker, R. E., Orleans.
Baldwin, S. J., Hortonville.
Ball, E. J., Valparaiso.
Ball, J. R., Lebanon.
Ball, L. L., Muncie.
Ball, T. Z., Waveland.

Banker, A. J., Columbus.
Banker, W. H., Columbus.
Barber, A. E., South Bend.
Barcus, P. J., Crawfordsville.
Bare, A. W., Bryantsville.
Barker, Joel T., Danville.
Barker, Thomas R., Danville.
Barnard, P. C., Oakville.
Barnes, Arthur L., Southport.
Barnes, C. A., Greenfield.
Barnes, G. O., Seymour.
Barnett, Charles E., Ft. Wayne.
Barnett, Otho, Salem.
Barnett, W. W., Ft. Wayne.
Barnfield, J. H., Logansport.
Barnhill, Jno. F., Indianapolis.
Barrett, C. P., Oliver.
Bartholomew, A. C., Logansport.
Bartlett, C. G., Lewisville.
Bash, J. M., Warsaw.
Basinger, T. W., Petersburg.
Bass, Frank, Gwynville.
Bastin, J. V., Greencastle.
Bates, J. M., Broad Ripple.
Batman, F. H., Bloomington.
Batman, W. F., Ladoga.
Baughman, J. N., Evansville.
Bauman, N. C., Wakarusa.
Baumgartner, O. C., Rockport.
Baxter, J. C., Auburn.
Baxter, J. W., Lanesville.
Beall, Charles G., Ft. Wayne.
Beach, C. E. C., Coesse.
Bear, L. H., Vevay.
Beard, E. R., Liberty.
Beard, Schuyler C., Vincennes.
Beasley, George F., Lafayette.
Beatley, J. L., Crawfordsville.
Beavers, Seth D., Decatur.
Beck, H. A., Indianapolis.
Beck, William S., Indianapolis.
Beckes, Norman E., Vincennes.
Beckett, C., Attica.
Beckett, G. A., Benham.
Beckman, H. S., Indianapolis.
Becknell, I. J., Goshen.
Bectol, C. O., Marion.
Bedwell, T. S., Dugger.
Begley, B. W., Evansville.
Bell, E. Edwin, Ft. Wayne.
Bell, Guido, Indianapolis.
Bell, J. N., New Burlington.
Bell, W. E., Terre Haute.
Belt, Richard, West Terre Haute.
Benedict, H., Springport.
Benham, Ch. W., Vincennes.
Benham, J. W., Columbus.
Berauer, J. M., Indianapolis.
Berger, E. V., Howell.
Bernheimer, H. L., Terre Haute.
Berner, Louis E., Indianapolis.
Berteling, J. B., South Bend.
Bethel, W. J., Winslow.
Bevier, Frank, Waterloo.
Biddle, F. M., Battle Ground.
Biery, T. E., Scottsburg.
Bills, Leroy, Atlanta.
Binkley, J. F., Evansville.
Birchfield, J. W., New Alsace.
Bird, J. E., New Albany.
Bitting, A. W., West Lafayette.
Bitz, J. F., Evansville.
Black, F. W., Ligonier.
Black, Silas D., Brazil.
Black, W. C., Marion.
Blair, Frank, Princeton.
Blair, J. S., Lynn.
Blair, W. W., Princeton.
Bland, C., Greensburg.
Bland, H. E., Fairbanks.
Blinks, E. G., Michigan City.
Bloom, H. G., Oxford.
Bloomer, F. H., Lagro.
Bloomfield, E. M., Peru.
Blossom, J. C., Mt. Summit.
Blount, R. D., Valparaiso.
Blount, R. F., Wabash.
Blount, R. T., Homer.
Blue, C. S., Tocsin.
Bockover, C., Briant.
Bockover, S. Marion, Briant.
Boersig, Jos. A., Indianapolis.
Boggs, M. M., Macy.
Bohman, R. M., Ft. Wayne.

Bohn, J. C., Terre Haute.
Boiling, L. A., Attica.
Bond, C. S., Richmond.
Bond, Marc L., Aurora.
Boone, B. H., Boggstown.
Boor, M. A., Terre Haute.
Boor, W. F., New Castle.
Boram, E. V., Anderson.
Boren, S. W., Poseyville.
Borley, E. R., South Bend.
Borley, W. E., Mishawaka.
Borton, T. Artemus, Plymouth.
Bosenbury, C., South Bend.
Boston, Ch. H., Bradford.
Botkin, C. L., Winchester.
Bottorff, John C., Corydon.
Botts, E. H., Zanesville.
Boulder, M. F., Frankfort.
Bounell, H. M., Waynetown.
Bounell, T. A., Jamestown.
Bowell, B. O. Carr, Laporte.
Bowen, J. F., Occident.
Bower, G. B. M., Ft. Wayne.
Bower, Jno. V., Malott Park.
Bowers, L. G., Richmond.
Bowers, Whitfield, Michigan City.
Bowker, Jas. J., Laotto.
Bowlby, Jos., Shelbyville.
Bowles, H. S., Muncie.
Boyd, C. E., West Baden.
Boyd, C. L., Paoli.
Boyd, C. L., Vincennes.
Boyd, H. B., Cambridge City.
Boyden, C. F., Evansville.
Boyden, W. H., Anderson.
Boyers, James S., Decatur.
Brackney, M. F., Mooresville.
Bradfield, Jno., Logansport.
Bradley, J. P., Abington.
Bradshaw, A. E., Halo.
Brady, T. R., Wabash.
Bramkamp, A. L., Richmond.
Brandon, W. S., Daleville.
Brannock, B. B., Jasper.
Brannon, Charles D., Crown Point.
Braxtan, T. N., Loogootee.
Brayton, A. W., Indianapolis.
Brayton, N. D., Indianapolis.
Breaks, L. Z., Terre Haute.
Breedlove, G. B., Brooklyn.
Brendell, John F., Zionsville.
Brent, I. N., Jamestown.
Bridge, L. M., Marion.
Briggs, C. F., Sullivan.
Brill, Jas. H., Indianapolis.
Briscoe, Clarence E., Depauw.
Brodbeck, George H., Roann.
Brokaw, R. E., Portland.
Brose, L. D., Evansville.
Brothers, G. M., New Paris.
Broughton, F. A., Waterloo.
Broughton, F. H., Wolcottsville.
Brown, A. L., Alamo.
Brown, Archibald, Rochester.
Brown, A. S., Paragon.
Brown, Benj. A., Indianapolis.
Brown, E. A., Indianapolis.
Brown, H. M., Indiana Harbor.
Brown, J. R., Sumption Prairie.
Brown, L. E., Ft. Wayne.
Brown, S. I., Knox.
Brown, T. F., Sanford.
Brownback, O. W., Pendleton.
Browne, Francis S., Garrett.
Brubaker, E. H., New Castle.
Brucker, C. M., Tell City.
Brudi, G. G., New Haven.
Bruggeman, H. O., Ft. Wayne.
Bruner, C. K., Greenfield.
Bruner, Mary L., Greenfield.
Bruning, Louise, Evansville.
Brunker, James. Riley.
Brunson, V. O., Newville.
Bryan, T. L., Evansville.
Buchanan, W. A., Hammond.
Buchman, A. P., Ft. Wayne.
Buchtel, I. O., Auburn.
Buck, G. M., Burrows.
Bucklin, G. W., Muncie.
Bulla, J. M., Richmond.
Bulla, M. S., Richmond.
Bullitt, Thos. W., River Vale.
Bulson, Albert E., Jr., Ft. Wayne.
Burcham, H. C., Albany.

Burckett, C. W., Warsaw.
Burckhardt, Louis, Indianapolis.
Burley, David M., Vincennes.
Burlingame, E. G., Oakland City.
Burlington, J. R., Attica.
Burr, T. S., South Bend.
Burroughs, J. P., Westport.
Burton, A. R., Princeton.
Busjahn, F. A., Logansport.
Busse, E. P., Evansville.
Butler, W. H., Columbus.
Butterworth, C. M., South Bend.
Button, C. E., Crown Point.
Buxton, Eva., Rockport.
Byers, O. A., Petersburg.
Byrne, John D., New Salisbury.
Byrns, J. D., Mitchell.

Cabell, A. L., Terre Haute.
Cady, N. W., Logansport.
Caffee, A. H., Terre Haute.
Caffee, B. V., Terre Haute.
Cain, D. B., Evansville.
Cain, Joseph D., Indianapolis
Calvert, J. H., Milton, Ky.
Calvin, J. C., Ft. Wayne.
Calvin, W. D., Ft. Wayne.
Cameron, J. F., Hamilton.
Cameron, V. V., Marion.
Camp, C. E., Camden.
Camp, W. E., Clarksville.
Campbell, Cyrus W., Hammond
Campbell, Frank, Shelbyville.
Campbell, H. M., Westville.
Campbell, R. M., West Point.
Campbell, T. B., West Lebanon.
Campbell, W. S., Lafayette.
Caney, P. H., Vincennes.
Canfield, B. V., Indianapolis.
Cannon, G. H., New Albany.
Cannon, J. H., South Bend.
Caplinger, C. A., Wallace.
Carey, W. W., Spencerville.
Carl, O. U., Peru.
Carlisle, P. G., East Connersville.
Carmichael, C. S., Seelyville.
Carnelly, Jas. H., Kokomo.
Carnes, Z., Greenwood.
Carney, C. E., Delphi.
Carr, James L., Monon.
Carson, J. C., Valparaiso.
Carson, L. O., Traders Point.
Carson, S. L., Lincoln City.
Carter, Amos, Plainfield.
Carter, Calvin, Brookville.
Carter, H., Bringhurst.
Carter, Laura, Shelbyville.
Carver, W. F., Albion.
Case, M. T., Attica.
Case, W. W., Zenas.
Casebeer, I. N., Newport.
Casebeer, J. B., Auburn.
Casper, John, Jasper.
Cauble, Wm. C., Salem.
Caylor, C. E., Pennville.
Cecil, A. A., Muncie.
Chafee, Wm. C., Huntington.
Chamberlin, Cameron, Indianapolis.
Chambers, B. F., Lyons.
Chancellor, S. R., Kokomo.
Chappell, R. S., Indianapolis.
Charles, Etta, Summitville.
Charlton, Fred. R., Indianapolis.
Chase, E. L., North Webster.
Cheney, V. S., Bluffton.
Chenoweth, E. B., Quincy.
Chenoweth, F. A., Winchester.
Chenoweth, N. T., Windsor.
Chevigny, J. A. J., Hammond.
Chidlow, A., Hammond.
Chittenden, E. W., Anderson.
Chittick, Andrew J., Burlington.
Chittick, Charles, Frankfort.
Chitwood, John E., Connersville.
Christian, Wilmer, Indianapolis.
Christie, James H., Canaan.
Clapper, Manton M., Hartford City.
Clark, C. S., Decatur.
Clark, D. D., Decatur.
Clark, E. D., Indianapolis.
Clark, J. B., Economy.
Clark, J. H., Connersville.
Clark, Joseph H., Princeton.
Clark, J. T., Hammond.

Clark, N. W., Sweetser.
Clark, Robert J., Monticello.
Clark, S. A., South Bend.
Clauser, A. C., Delphi.
Claypool, R. W., Newtown.
Clayton, George R., Monon.
Clements, G. E., Crawfordsville.
Clements, H. J., Converse.
Cleveland, W. F., Evansville.
Clevenger, W. F., Indianapolis.
Cline, George F., Scottsburg.
Cline, Lewis C., Indianapolis.
Close, T. H., Scottsburg.
Clouse, Bertha A., Hope.
Cluthe, William, Tell City.
Clutter, T. J., Atwood.
Coble, Jacob, Spencer.
Coble, Ralph, Spencer.
Cochran, R. W., Madison.
Cochran, T. C., Sharpsville.
Coffin, A., Carlos City.
Cohen, David, Jeffersonville.
Colburn, C. P., Richmond.
Cole, A. M., Indianapolis.
Cole, W. H., Switz City.
Coleman, J. W., Petersburg.
Coleman, W. H., Evansville.
Coleman, W. S., Rushville.
Collins, A. W., Anderson.
Collins, C. C., Roachdale.
Combs, C. N., Terre Haute.
Combs, M. R., Terre Haute.
Comstock, J. A., Greenfield.
Conger, C. W., Indianapolis.
Conley, L. H., Gas City.
Connelly, H. M., Shelbyville.
Conrad, E. M., Anderson.
Conway, C. E., Perkinsville.
Conway, R. W., Ockley.
Cook, B. H., Anderson.
Cook, Charles J., Indianapolis.
Cook, Charles P., New Albany.
Cook, Clark, Fowler.
Cook, George J., Indianapolis.
Cook, J. A., Goshen.
Cook, J. W., Pendleton.
Cook, L. H., Bluffton.
Cook, P. M., Solsberry.
Cook, R. C. N., Boswell.
Cook, Wm. M., Lagrange.
Coombs, David, Charlestown.
Cooper, A. M., Muncie.
Cooper, Ernest, Plainfield.
Cooper, J. A., Terre Haute.
Cooperider, J., Madison.
Copeland, Charles C., N. Madison.
Copeland, G. W., Moorefield.
Copeland, R. M., Bennington.
Corbin, E. M., Sullivan.
Corey, Charles W., Hartford City.
Corey, J. D., McCordsville.
Cornell, F., Galveston.
Cosby, George O., Burnsville.
Cosby, L. B., Cynthiana.
Costello, H. F., Decatur.
Cottingham, Chas. E., Indianapolis.
Cottingham, I. E., Evansville.
Cotton, C. C., Elwood.
Cotton, S. M., Goldsmith.
Coulson, S. B., Jackson Hill.
Courtney, Thomas E., Indianapolis.
Coverdale, Earl G., Decatur.
Coverdale, J. S., Decatur.
Covertson, J. W., Frankton.
Cowan, E. H., Crawfordsville.
Cowen, Lewis C., Rising Sun.
Cowing, H. A., Muncie.
Cox, C. E., Cannelton.
Cox, C. R., Lynn.
Cox, D. A., Howell.
Cox, Edgar, Kokomo.
Cox, J. B., Mt. Vernon.
Cox, J. G., Holton.
Cox, J. W., Bufkin.
Cox, L. T., Napoleon.
Cox, N. D., Spencer.
Craig, J. A. Greenwood.
Craig, T. E., Lawrenceburg.
Crampton, Charles C., Delphi.
Crapo, G. W., Terre Haute.
Cravens, E. R., Linton.
Cravens, William R., Bloomfield.
Crawford, G. S., Clifty.
Cray, Arthur B., Monticello.

Creel, T. J., Angola.
Cregor, F. W., Carthage.
Cremeans, W. C., Mt. Vernon.
Crismond, J. W., Anderson.
Critchfield, J. S., Princeton.
Cromer, L. G., Union City.
Cromer, Mary, Union City.
Cronk, C. F., Wolcott.
Crose, Samuel E., Indianapolis.
Crouse, Henry W., Knightstown.
Crowder, J. R., Sullivan.
Crowder, R. H., Sullivan.
Crull, E. A., Ft. Wayne.
Crum, Claude C., Jeffersonville.
Crumpacker, C. D., South Bend.
Crumrine, I. S. J., Landess.
Culbertson, Scott, Vevay.
Cully, John F., Bainbridge.
Culmer, W. N., Bloomington.
Culp, L. L., Ft. Wayne.
Cummings, D. J., Ewing.
Cummings, D. J., Jr., Ewing.
Cummings, S. M., Elkhart.
Cunningham, J. M., Indianapolis.
Current, O. E., Farmland.
Curtiss, W. H., Frankfort.
Cushman, A., Graysville.
Cushman, R. A., Princeton.

Daily, J. M., Rockport.
Daily, W. W., Stanley.
Dale, B. C., Marion.
Dale, Omar E., Alquina.
Dancer, Charles R., Ft. Wayne.
Dancer, Chas. W., Stroh.
Daniel, William, Corydon.
Daniels, George, Marion.
Daniels, G. W., Sweetser.
Danuer, Rufus J., Elnora.
Darby, A. B., Waterloo.
Darling, E. S., North Liberty.
Darroch, S. C., Cayuga.
Darroch, W. P., Cayuga.
Daugherty, C. A., South Bend.
Davenport, H. F., Hayden.
Davenport, William H., Vincennes.
Davidson, A. W., Brownsburg.
Davidson, E. E., Lafayette.
Davidson, J. F., Crawfordsville.
Davidson, W. R., Evansville.
Davis, A. T., Marion.
Davis, C. P., Galena.
Davis, Elmer J., Mooreland.
Davis, F. L., Evansville.
Davis, John Q., Indianapolis.
Davis, L. N., Farmland.
Davis, Royce, Decker.
Davis, T. H., Richmond.
Davis, W. M., Coal City.
Davis, Wm. H., Corydon.
Davisson, Henry C., Hartford City.
Dean, Daniel L., Elizabeth.
Dean, E. R., South Bend.
DeForest, D. A., Boonville.
DeForest, D. F., Boonville.
Defrees, H. J., Nappanee.
DeHass, T. W., Indianapolis.
Deilman, F. C., Fulton.
Delaney, S. S., Williamsport.
DeLong, O. A., Azalia.
Deming, N. L., Ft. Wayne.
Demotte, Jerome, Odon.
Denbo, Wm. R., Mauckport.
Dennis, F. L., Crawfordsville.
Denny, Charles, Belleview.
Denny, George E., Madison.
Denson, H. A., Indianapolis.
Depew, E. W., Wolf Lake.
Deputy, E. M., Dugger.
Derbyshire, E., Connersville.
De Tar, Geo. B., Winslow.
DeVaney, Mitchell O., Indianapolis
De Vaux, Edward F., Ft. Wayne.
DeWeese, L., Hemlock.
Dewey, E. L., Hammond.
Dewey, F. N., Elkhart.
Dicken, C. L., Lafontaine.
Dickes, J. T., Portland.
Dickey, A. S., Tipton.
Didlake, M. T., Monticello.
Dieff, J. F. H., Campbellsburg.
Dierking, A. W., Oolitic.
Dilley, Fred C., Brazil.
Dillinger, J. R., French Lick.

Dillman, L. D., Connersville.
Dings, W. H., Mitchell.
Dinnen, James M., Ft. Wayne.
Dinsmore, Walter H., Kramer.
Dippell, Emil T., Huntington.
Dixon, H. F., Evansville.
Dobbins, A. O., Wheeler.
Dodds, W. T. S., Indianapolis.
Doerr, J. E., Mt. Vernon.
Dollens, T. C., Trinity Springs.
Domer, W. A., Wabash.
Donaldson, A. I., Washington.
Donica, T. N., Tunnelton.
Donnelly, J. E., Terre Haute.
Dooley, Y. J., Marion.
Dooley, M. M., Loogootee.
Doolittle, B. M., Ft. Wayne.
Dorsey, Francis O., Indianapolis.
Doster, Hezekiah, Poneto.
Douglas, Dilver E., E. Enterprise.
Dove, S. C., Westfield.
Dowden, Ch. W., West Baden.
Downey, L. J., Vincennes.
Downing, J. F., Yorktown.
Downing, J. R., Yorktown.
Drake, Jas. F., Youngstown.
Drake, Morris, Shelbyville.
Drayer, L. P., Ft. Wayne.
Dresch, C. A., Mishawaka.
Drescher, Marie L., Michigan City.
Driscoll, C. C., Lafayette.
Druley, O. E., Anderson.
Dryer, D. W., Lagrange.
Dubois, E. J., Indianapolis.
Dubois, F. T., Liberty.
Duddenhausen, W. C., Evansville.
Duemling, H. A., Ft. Wayne.
Dugan, Thos. J., Indianapolis.
Dugdale, R. B., South Bend.
Dumfie, J. W., Etna Green.
Duncan, J. B., Bedford.
Duncan, Wm. F., Manchester.
Dunham, F. H., Richmond.
Dunlavey, I. E., Indianapolis.
Dunn, W. H., Gaston.
Dunning, L. H., Indianapolis.
Dupuy, Charles, Riley.
Durham, Charles O., Indianapolis.
Durham, J. L., Graysville.
Dutrow, C. E., Bristol.
Dyer, L. W., Ossian.

Eads, C. V., Ambia.
Earp, S. E., Indianapolis.
Eash, S. M., Shipshewana.
Easley, E. P., New Albany.
Eastman, F. P., South Bend.
Eastman, J. R., Indianapolis.
Eastman, T. B., Indianapolis.
Eberhard, E. L., South Whitley.
Eberhardt, W., Michigan City.
Eby, H. W., Goshen.
Eckelman, F. C., Elkhart.
Eckelman, M. M., Elkhart.
Edenharter, George F., Indianapolis
Edmonds, S. A., Goshen.
Edwards, C. H., Sullivan.
Egan, B. W., Carroll.
Egolf, H. F., Liberty.
Eickel, S. J., Evansville.
Eidson, J. W., Bourbon.
Eikenberry, A. A., Peru.
Eisenbeiss, C. M., Elkhart.
Eley, Lorenzo D., Plymouth.
Elfers, John, Rising Sun.
Elliott, H. H., Glenwood.
Elliott, James, Terre Haute.
Elliott, J. W., Linden.
Elliott, R. H., Connersville.
Elrod, E. L., Henryville.
Elrod, M. N., Columbus.
Elrod, S. B., Raglesville.
Emery, C. H., Bedford.
Emmerl, E. J., Lawrenceburg.
Emmick, T. C., Mt. Vernon
Empson, Blaine, Seymour R. R.
Engleman, L. P., Reese Mill.
Englerth, P. O., North Judson.
English, C. H., Ft. Wayne.
English, J. P., Terre Haute.
Enslen, Wm. M., Ft. Wayne.
Ensminger, S. L., Crawfordsville
Epperson, Adah, South Bend.
Erdman, Bernhard, Indianapolis.

Eshelman, L. H., Marion.
Eshelman, W. A., Anderson.
Etter, J. R., Crawfordsville.
Evans, Caleb S., Union City.
Evans, E. B., Greencastle.
Evans, H. M., Valparaiso.
Evans, J. J., Winchester.
Evans, John M., Mellott.
Ewing, U. B. G., Richmond.

Fagaly, A. T., Lawrenceburg.
Fair, H. D., Muncie.
Fairfield, W. J., Anderson.
Faith, Abraham H., Sullivan.
Fankboner, W. A., Marion.
Farrabee, C. E., Indianapolis.
Farver, M. A., Middlebury.
Fattic, John B., Anderson.
Faulkner, Clara, Hobart.
Fenton, S. C., Boswell.
Ferguson, C. E., Indianapolis.
Ferguson, W. H., Brighton.
Fermier, P. G., Leesburg.
Fernald, W. J., Frankfort.
Ferrell, J. E., Eden.
Ferris, Edgar S., New Castle.
Field, David L., Jeffersonville.
Field, W. H., Evansville.
Finch, Gilbert, Center Point.
Fink, H. A., South Bend.
Fink, O. E., Terre Haute.
Finley, George W., Brazil.
Finney, Charles J., Attica.
Fisher, A. L., Elkhart.
Fisher, E. S., Markle.
Fisher, J. M., Lapel.
Fitch, A. P., Lebanon.
Fitzgibbon, John, Washington.
Fitzpatrick, B., Columbus.
Fleming, F. C., Elkhart.
Fleming, H. G., Newpoint.
Fleming, J. C., Elkhart.
Fletcher, C. I., Indianapolis.
Floyd, Benj. L. W., Evansville.
Flucks, Carl, St. Wendell.
Flynn, E. N., Jeffersonville.
Flynn, Wm., Marion.
Fodrea, Z. H., Westfield.
Folsom, E. M., Boonville.
Ford, J. H., Indianapolis.
Ford, Katherine C., Indianapolis.
Ford, L. W., Syracuse.
Ford, O. P. M., Rising Sun.
Ford, W. P., Boonville.
Foreman, W. H., Indianapolis.
Forester, Dr., Delaware.
Forry, Benj. F., Bath
Fortune, J. G., Burnett.
Foust, P. G., Santa Fe.
Fouts, J. M., Centerville.
Fowler, W. E., Lagrange.
Fox, Henry A., Gosport.
Fox, R. H., Freelandsville.
Foxworthy, Frank W., Indianapolis.
Francis, E. T., Columbus.
Franks, H. P., Muncie.
Franks, O. P., Brimfield.
Franks, W. H., Ligonier.
Frazer, Charles, Muncie.
Freeland, John L., Indianapolis.
Freeland, John T., Bedford.
Freeman, E. D., Osgood.
Freeman, James, Sullivan.
Fretz, J. C., Deedsville.
Frick, H. C., Evansville.
Friermood, E. K., Greentown.
Frink, C. W., Elkhart.
Frisz, Joseph A., Terre Haute.
Fritsch, L. J., Evansville.
Fritsch, W. A., Evansville.
Frost, R. F., Huntington.
Fry, Chas. W., Huntington.
Fry, B. C., Indianapolis.
Fulenwider, H. L., Rigdon.
Fuller, W. H., North Vernon.
Fullinwider, C. H., Mt. Vernon.
Fulton, George E., Bluffton.
Fulton, John C., Bluffton.
Funk, Austin, New Albany.
Funk, C. C., New Albany.
Funk, Z. T., Corydon.
Furniss, S. A., Indianapolis.

Gabe, Harry E., Indianapolis.
Gabel, H., Centerville.
Gaddy, O., Paris Crossing.
Galbreth, J. P., Burnettsville.
Galbreth, W. H., Rockfield.
Galloway, N. G., South Bend.
Gantz, Thos., Freedom.
Garber, J. B., Dunkirk.
Gardner, Fletcher, Bloomington.
Gardner, Lucy W., Bloomington.
Garner, C. A., Kendallville.
Garr, J. O., Kokomo.
Garrett, F. W., Liberty Center.
Garrett, John D., Indianapolis.
Garretson, W. M., Perkinsville.
Garshweiler, Wm. P., Indianapolis.
Garstang, R. W., Indianapolis.
Geary, J. K., Ft. Wayne.
Geisinger, Lewis N., Auburn.
Gemmill, H. C., Indianapolis.
Gentle, L. M., Milton.
Gerard, R. H., Crawfordsville.
Gerrish, M. F., Seymour.
Gerrish, W. D., Clinton.
Gers, Henry, Washington.
Gibbons, G. L., Huron.
Gibbons, J. A., Mitchell.
Gibbs, Charles Milo, Greenfield.
Gibbs, J. C., Crown Point.
Gibson, J. J., Alexandria.
Giffen, R. I., Lagro.
Gifford, A. W., Tipton.
Gilbert, A. Irvin, Kewanna.
Gilbert, J. L., Logansport.
Gilbert, Joseph L., Kendallville.
Gilbert, W. H., Evansville.
Gilbrech, A. H., Lakeville.
Gilkison, J. S., Indian Springs.
Gillespie, C. E., Crothersville.
Gillespie, J. T., Reelsville.
Gillum, W. H., Rockville.
Gilpin, J. H., Ft. Wayne.
Giltner, Harry A., Mathews.
Given, C. E., Lewis.
Glaze, J. M., New Harmony.
Glen, L. F., Crandall.
Glenn, Marion, Vincennes, R. R. 9.
Glover, John F., Evansville.
Goar, C. S., Indianapolis.
Gobble, F. R., English.
Goebel, William, Elkhart.
Good, A. H., Selma.
Good, Charles H., Warren.
Goodin, S. A., Bluffton.
Goodrich, C. D., Elkhart.
Goodwin, C. B., Kendallville.
Goodwin, Frank, Monticello.
Gordin, S. E., Alquina.
Gordon, Charles W., Ft. Wayne.
Gordon, E. R., Hobart.
Goshorn, Leonard, Hymera.
Goss, M., Rockville.
Gould, C. E., Rochester.
Gould, S. W., Argos.
Graessle, G. G., Seymour.
Graff, Morton P., Lewisville.
Graham, Alois B., Indianapolis.
Graham, Hannah, Indianapolis.
Graham, Nathan P., Madison.
Graham, Oliver P., Jeffersonville.
Graham, W. B., Noblesville.
Grant, G. E., Marengo.
Grant, G. H., Richmond.
Gravis, C. M., Martinsville.
Gray, J. L., Laporte.
Gray, Jno. W., Bloomfield.
Grayston, B. W. B., Huntington.
Grayston, Charles E., Huntington.
Grayston, Fred W., Huntington.
Green, D. M., Muncie.
Green, E. V., Martinsville.
Green, G. R., Muncie.
Green, J. H., North Vernon.
Green, F. H., Rushville.
Green, Thomas C., Albion.
Green, T. G., Shelbyville.
Green, William L., Pekin.
Green, W. T., Albion.
Greenawalt, G. L., Ft. Wayne.
Greene, Henry E., Crawfordsville.
Greene, J. B., Mishawaka.
Greenleaf, G. F., Evansville.
Greenleaf, H. A., Markland.
Gregg, Joseph W., Brazil.

Gregory, Henry, Laurel.
Greist, H. W., New Castle.
Griffis, W. T., Fountain City.
Griffith, J. B., Alamo.
Griffith, M. J., Crawfordsville.
Griffith, T. J., Crawfordsville.
Grim, Geo. B., Oaktown.
Grim, Simon, Caborns.
Grishaw, H. E., Tipton.
Grisier, F. G., Columbia City.
Griswold, E. H., Peru.
Gronendyke, O. J., New Castle.
Gronendyke, T. W., New Castle.
Gross, W. O., Ft. Wayne.
Grover, C. B., Greensburg.
Grubb, Albert G., Mongo.
Gudgel, Harry B., Hazleton.
Gudgel, J. E., Cynthiana.
Gwaltney, S. P., Chrisney.

Hackleman, F. G., Rushville.
Hackley, R. P., Medaryville.
Hadley, James W., Rossville.
Hager, W. A., South Bend.
Haggerty, R. I., Elkhart.
Hale, M. M., Wabash.
Hale, N. T., Wabash.
Hall, J. E., Alexandria.
Hall, H. J., Franklin.
Hall, H. M., Millersburg.
Hall, Jos., Logansport.
Hall, J. W., Portland.
Hall, M. L., Newport.
Hall, Silas, Vincennes.
Hall, T. J., Grafton.
Hallanan, Joseph A., Logansport.
Hannell, R. V., Lafayette.
Hamer, H. G., Indianapolis.
Hamilton, A. A., Marion.
Hamilton, Allen, Ft. Wayne.
Hamilton, A. N., Waynetown.
Hamilton, E. Everett, Connersville
Hamilton, N. C., Kokomo.
Hamilton, S. N., Connersville.
Hammond, A. K., Ft. Wayne.
Hammond, G. B., English.
Hampton, S. E., Milton, Ky.
Hancock, C. F. C., Jeffersonville.
Hani, W. F., Elkhart.
Hanna, J. E., Clarksville.
Hanna, L. M., Greencastle.
Hannell, Roy V., Lafayette.
Hansel, C. A., Lakeville.
Hardesty, J. C., New Castle.
Hardman, W. E., N. Manchester.
Hardwick, R. L., Mt. Vernon.
Hardy, J. S., Lebanon.
Harper, J. A., Shelburn.
Harpole, C. B., Evansville.
Harrah, J. M., Switz City.
Harris, C. E., Bloomington.
Harris, J. E., Bloomington.
Harris, O. K., Elletsville.
Harris, W. W., Elletsville.
Harrison, W. H., Kokomo.
Harrod, N., Tampico.
Harrold, E. O., Marion.
Harter, Harry, Newtonville.
Harter, J. H., Anderson.
Harter, W. P., Anderson.
Hartloff, C. W., Evansville.
Haslep, Marie, Indianapolis.
Hassenmiller, M., West Baden.
Hatfield, I. N., Bluffton.
Hatfield, J. F., Moran.
Hauenstein, G. W., Elkhart.
Haughton, R. E., Richmond.
Havice, S. H., Ft. Wayne.
Hawes, James K., Clifford.
Hawkins, E., Greencastle.
Hawkins, Madge P., Terre Haute.
Hawkins, Robert W., Brazil.
Hawley, W. H., College Corner.
Hawn, C. E., Little York.
Haworth, M. C., Noblesville.
Hayden, A. M., Evansville.
Hayden, David N., Vevay.
Hayes, John W., Albion.
Haynes, W. H., Aurora.
Hays, Franklin W., Indianapolis.
Hays, T. A., Burns City.
Hazel, James T., Freedom.
Hazelwood, Green, Chambersburg.
Hazelwood, John, New Albany.

Hazzlewood, G. R., English.
Heath, Frederic C., Indianapolis.
Hebble, D. G., Terre Haute.
Heberer, J. M., Evansville.
Heimann, L., Evansville.
Held, Henry W., Vincennes.
Heller, Fred, Brownstown.
Heller, Oscar, Greenfield.
Helm, Charles J., Peru.
Helms, W. M., Williamsburg.
Hemphill, F. H., Seeleyville.
Henderson, Samuel, St. Phillipps.
Hendricks, W. E., Martinsville.
Henley, G., Fairmount.
Henry, T. L., McCowan.
Henry, W. C., Aurora.
Henson, Theo., Martinsville.
Herr, Henry, Washington.
Herrmann, Arthur J., Logansport.
Herrmann, Franz J., Logansport.
Hershey, F. C., Carmel.
Hershey, K. C., Carmel.
Hervey, Minnie E., Richmond.
Heskett, W. C., Bloomington.
Hess, F. C., Cadiz.
Hess, J. N., New Marion.
Hess, M. M., Morristown.
Hessler, Robert, Logansport.
Hestler, O. J., Blountsville.
Hetherington, J. P., Logansport.
Hetrick, J., Ft. Wayne.
Heusler, Ernest C., Howell.
Hewins, W. A., Chandler.
Hewitt, H. S., Mishawaka.
Hiatt, J. E., New Castle.
Hickman, C. C., Yeoman.
Hicks, C., Mt. Vernon.
Hicks, Jas. M., Huntington.
Hicks, J. L., Arcadia.
Hicks, L. F., Stilesville.
Higgins, J. B., Peru.
Hildebrand, H. O., Topeka.
Hill, F. E., Muncie.
Hill, Henry B., Logansport.
Hill, J. W., South Bend.
Hill, L. B., Seymour.
Hillis, J. D., Lafayette.
Hines, F. M., Auburn.
Hines, L. A., Warsaw.
Hines, W. L., Warsaw.
Hinkle, E. I., Goldsmith.
Hinshaw, O. W., Lynn.
Hoadley, W. J., Danville.
Hoag, W. I., Indianapolis.
Hoagland, C. S., Milroy.
Hobbs, Alice L., Indianapolis.
Hobbs, H. C., Salem.
Hobday, W. A., Ohio Falls.
Hodges, E. F., Indianapolis.
Hodges, Fletcher, Indianapolis.
Hodson, Geo., Evansville.
Hoggatt, W. W., French Lick.
Holder, R. E., Columbus.
Holder, Union H., Washington.
Holland, G. F., Bloomington.
Holland, P. C., Bloomington.
Hollenbeck, B. W., Westville.
Holliday, D. A., Fairmount.
Holliday, L. D., Fairmount.
Hollingsworth, A. S., Goshen.
Hollingsworth, Ernest, Washington.
Hollingsworth, M. P., Princeton.
Hollingsworth, S. G., Brazil.
Hollis, Ella A., Hartford City.
Hollis, Samuel, Hartford City.
Hollis, Wm. Allen, Hartford City.
Holloway, Marie L., Decatur.
Holloway, O. E., Knightstown.
Holloway, W. A., Logansport.
Holly, A. C., Attica.
Holmes, Ella Sullivan, Aurora.
Holton, William, New Harmony.
Holtzendorff, A. C., Plymouth.
Holtzendorff, C. F., Plymouth.
Holtzendorff, H., Mishawaka.
Holtzman, Rice C., Stinesville.
Hood, Thomas C., Indianapolis.
Hoopingarner, G. B., Elkhart.
Hoover, Guy, Boonville.
Hoover, L., Decker.
Hoover, P. N., Boonville.
Hope, C. F., Coatsville.
Hopkins, R. R., Richmond.
Hopkins, W. G., Ft. Branch.

Hopper, M. S., Lafayette.
Horn, A. H., Putnamville.
Hornocker, S. D., Silverville.
Horrom, G. W., Hatfield.
Hoskins, G. H., Whiting.
Hoskins, Walter D., Indianapolis.
Hostetler, A. J., Shipshewana.
House, G. H. F., Indianapolis.
House, Jno. W., Indianapolis.
Houser. B. A., Wabash.
Howard, F. M., St. Paul.
Howard, Glen B., Warsaw.
Howard, J. L., West Baden.
Howard, Noble P., Greenfield.
Howard, S. B., Kossuth.
Howat, W. F., Hammond.
Howerth, Cora, Valparaiso.
Howes, Jas. W., Bowling Green.
Hoy, B. F., Syracuse.
Huber, J. G., Evansville.
Hudson, M. D., Evansville.
Huff, O. N., Fountain City.
Huffman, G. E., Long Cliff.
Huffman, W. G., Richmond.
Hughes, W. L., Indiana Harbor.
Hughes, Wm. F., Indianapolis.
Humphreys, F. B., Angola.
Hunt, B. S., Winchester.
Hunt. F. P., Leipsic.
Hunt, John S., W. Terre Haute.
Hunt, Lee F., Anderson.
Hunt, Stephen, Plainfield.
Hunt, W. A., Lynnville.
Hunter, F. S., Bedford.
Hunter, John R., Huntington.
Hunter, W. M., Petersburg.
Hupe, Charles, Lafayette.
Hurst, E. M., Cloverdale.
Hurst, Steven H., Laconia.
Hurt, G. K., Thorntown.
Hurty, John N., Indianapolis.
Hutcheson, W. R., Greencastle.
Hutchings, B. F., Crawfordsville.
Hutchings, B. M., Crawfordsville.
Hutchings, F. F., Indianapolis.
Hutts, H. W., Sharpsville.
Hyde, L. A., Linton.

Ihrig, F. M., Goshen.
Imel, E. S., Petersburg.
Ingle, C. V., Evansville.
Inks, J. S., Nappanee.
Inlow, G. I., Blue Ridge.
Inlow, I. N., Blue Ridge.
Ireland, G. L., Winslow.
Irwin, A. J., Port Huron, Mich.
Ivey, D. R., La Crosse.

Jackson, F. G., Muncie.
Jaeger, A. S., Indianapolis.
James, N. A., St. Meinrad.
James, Oliver, Cory.
Jameson, Henry, Indianapolis.
Jaquith, O. S., Lawrenceburg.
Jay, M. T., Portland.
Jeffries, H. S., Upland.
Jenkins, Jennie, Richmond.
Jenkins, J. M., Cortland.
Jenkins, W. O., Terre Haute.
Jennings, W. L., Bridgeport.
Jerome, J. N., Evansville.
Jessup, Maria A., Friendswood.
Jett, F. H., Terre Haute.
Jobes, N. E., Indianapolis.
Johns, Elmer D., Zionsville.
Johnson, David E., Moore's Hill.
Johnson, H., Newpoint.
Johnson, J. E., Marion.
Johnson, J. J., Sulphur.
Johnson, L. B., Ireland.
Johnson, Luther, Bourbon.
Johnson, P. S., Richmond.
Johnson, W. A., Wawaka.
Johnson, W. H., Brightwood.
Johnston, A., Akron.
Johnston, M. A., Oaktown.
Johnston, M. F., Richmond.
Johnston, S. A., Indianapolis.
Jones, A. B., Lebanon.
Jones, Cadwalader, Charlestown.
Jones, George E., Evansville.
Jones, H., Ober.
Jones, H. E., Anderson.
Jones, I. G., Vincennes.
Jones, Jay, Medaryville.

Jones, J. G., Versailles.
Jones, Jesse M., Cataract.
Jones, O. H., Crawfordsville.
Jones, Oscar, Joliet ville.
Jones, P. W., Ober.
Jones, T. M., Anderson.
Jordan, L. W., Wabash.
Jump, S. G., Selma.
Justice, Wm. A., Greenfield.

Kahlo, Geo. D., French Lick.
Kahn, David L., Indianapolis.
Kalbfleisch, A. H., Peru.
Kamman, G. H., Seymour.
Kamman, H. H., Columbus.
Kane, Alfred, Ft. Wayne.
Kaple, J. D., South Bend.
Kautz, John, Wabash.
Keegan, C. J., Chandler.
Keegan, E. W., Crawfordsville.
Keeling, J. E., Waldron.
Keene, T. V., Indianapolis.
Keeney, B. G., Shelbyville.
Keiper, G. F., Lafayette.
Kell, S. D., Liberty.
Keller, F. G., Alexandria.
Keller, H. E., Decatur.
Kelley, James F., Livonia.
Kelley, J. N., Westville.
Kelly, J. C., Mitchell.
Kelly, L. H., Hammond.
Kelsay, C., Evansville.
Kelsey, A. J., Monterey.
Kelsey, W. E., Monterey.
Kelsey, William, Monterey.
Kelso, U. G., Dubois.
Kemp, Jos. W., Roanoke.
Kemper, A. T., Muncie.
Kemper, G. W. H., Muncie.
Kemper, W. W., Muncie.
Kendal, Arnold P., Austin.
Kendall, C. W., Pine Village.
Kendle, G. S., Princeton.
Kennedy, Albert C., Patricksburg.
Kennedy, Bernays, Indianapolis.
Kennedy, C. M., Camden.
Kennedy, D. P., Martinsville.
Kennedy, John, Paragon.
Kennedy, Samuel, Shelbyville.
Kennedy, T. C., Shelbyville.
Kennedy, W. H., Shelbyville.
Kercheval, C. H., Greensburg.
Kern, Aaron, Wabash.
Kern, Chas. B., Lafayette.
Kerr, J. D., Greensfork.
Kerrigan, J. J., Michigan City.
Kerth, J. H., Evansville.
Kesler, A. J., Ft. Wayne.
Kessinger, W. E., Sanborn.
Ketcham, C. L., Guilford.
Ketchum, George V., Portland, Ore.
Keyes, O. M., Dana.
Keyes, P. H., Dana.
Kienzle, F. W., Greensfork.
Kilgore, Frank, Dalesville.
Kimball, M. C., Converse.
Kimberlin, A. C., Indianapolis.
Kime, J. T., Petersburg.
Kimmel, A. J., Hudson.
King, C. H., Wabash.
King, H. O., Kendallville.
King, H. O., Pierceton.
King, J. E., Richmond.
King, J. M., Greencastle.
King, M. O., Rochester.
King, R. F., New Ross.
King, W. F., Columbia City.
King, Warren R., Greenfield.
Kirk, E. E., Spiceland.
Kirkpatrick, A. M., Columbus.
Kirby, G. W., Millersburg.
Kiser, Edgar F., Indianapolis.
Kister, George, Elberfeld.
Kistner, J. W., Elkhart.
Kithcart, N. I., Columbia City.
Kitson, F. S., N. Manchester.
Klein, W. W., Bloomington.
Klingler, M. E., Garrett.
Knabe, Helene, Indianapolis.
Knapp, A. B., Washington.
Knapp, A. J., Evansville.
Knapp, B. J., Evansville.
Knapp, Charles, Evansville.
Knapp, George, Vincennes.

Knapp, H. C., Haysville.
Knapp, Victor, Ferdinand.
Kneale, W. W., Anderson.
Knepple, La Marr, Wakarusa.
Knight, J. C., Jonesboro.
Knoefel, A. F., Linton.
Knott, D. C., Plymouth.
Knowlton, M., Terre Haute.
Knox, E. S., Indianapolis.
Kohr, T. W., Hammond.
Kolmer, John, Indianapolis.
Koons, H. H., New Lisbon.
Kratzer, E. F., Peru.
Kreider, M. K., Goshen.
Kreider, W. B., Goshen.
Kremer, Nicholas A., Madison.
Krueger, F. W., Richmond.
Kuhn, B. F., Elkhart.
Kyle, John J., Indianapolis.

LaBier, C. R., Terre Haute.
Lairy, M. M., Lafayette.
Lake, G. B., Wolcottville.
Lamberson, Harry, Connersville.
Lambert, J. C., Colfax.
Lambert, J. L., Brazil.
Lanam, J. H., Franklin.
Landon, L. C., Priam.
Lane, C. D., Waterloo.
Lane, W. H., Angola.
Langdon, Harry K., Indianapolis.
Langhead, J. T., Terre Haute.
Larimore, J. M., Greenfield.
Larkins, E. L., Terre Haute.
Lathrop, A. A., Lexington.
Laubscher, S. R., Evansville.
Lauer, A. J., Whiting.
Laughlin, C. E., Evansville.
Laval, W. J., Evansville.
Lawson, J. E., Corydon.
Lawson, W. T., Danville.
Layman, D. W., Indianapolis.
Layman, E. W., Terre Haute.
Leathers, D. A., Indianapolis.
Leavitt, R., Terre Haute.
Lecrone, Ira, Silver Lake.
Ledbetter, J. M., Michigan City.
Lee, D. F., Zionsville.
Lee, G. W. H., Indianapolis.
Leeds, F. R., Michigan City.
Leedy, C. E., Pierceton.
Leib, Alfa, Anderson.
Leister, Wm. L., Oakland City.
Leiter, W. S., Claypool.
Lemmon, S. W., Albion.
Lemon, H. K., Goshen.
Lemon, J. H., New Albany.
Lent, E. J., South Bend.
Leonard, H. S., Indianapolis.
Letherman, A. P., Valparaiso.
Lett, O. A., Newburg.
Levering, Guy P., Lafayette.
Lewis, George C., Madison.
Lewis, George F., Knightsville.
Lewis, M. J., Marion.
Libbert, E. J., Aurora.
Lidikay, E. C., Ladoga.
Lindenberger, Irvin, French Lick.
Lindley, Laban, Paoli.
Lingle, S. L., Paoli.
Link, Goethe, Indianapolis.
Link, W. H., Indianapolis.
Linthicum, E., Evansville.
Linville, D. G., Columbia City.
Linville, D. S., Columbia City.
Littell, W. R., Cambridge City.
Little, Charles S., Indianapolis.
Little, John A., Logansport.
Little, P. B., Whitestown.
Lloyd, A. W., Marion.
Lockwood, F. W., South Bend.
Lockwood, R. L., Elkhart.
Loehr, E. C., Noblesville.
Logan, A. R., Algiers.
Logan, H. V., New Salem.
Lohrmann, Henry, Indianapolis.
London, E. B., Hazleton.
Long, A. J., Anderson.
Long, Charles R., Pierceton.
Long, H. H., Kingsbury.
Long, H. P., Hartford.
Long, J. B., Indianapolis.
Longanecker, E. W., Anderson.
Longfellow, T. W., Tipton.

Loomis, Charles, Florence.
Loop, A. L., Economy.
Lorenz, J. W., Evansville.
Lorimore, John H. C., Hartford City.
Loring, C. J., Rochester.
Loring, D. J., Valparaiso.
Loring, S. C., Plymouth.
Love, J. R., Zenas.
Lowder, C. M., Dugger.
Lowder, H. R., Bloomfield.
Lowder, Lillie A., Bloomington.
Lowder, L. T., Bloomington.
Lower, M. O., North Manchester.
Luckett, C. D., English.
Luckett, L. P., Terre Haute.
Luckey, J. E., Wolf Lake.
Ludwick, L. V., Connersville.
Lukemeyer, E. G., Huntington.
Lukemeyer, Louis, Huntington.
Lukenbill, L. L., Marco.
Lukenbill, O. C., Indianapolis.
Luzzadder, J. E., Smithville.
Lybrook, Wm. E., Young America.
Lynch, J. Y., Rosedale.
Lyon, F. P., Flora.
Lyons, J. H., North Webster.

McAlexander, R. O., Indianapolis.
McAllister, E. B., Terre Haute.
MacBeth, A. H., Ft. Wayne.
MacBeth, Harriet S., Ft. Wayne.
McBeth, Walter, Burnettsville.
McBride, Isaac, Jeffersonville.
McCain, R. C., Kentland.
McCall, Jas., Terre Haute.
MacCammon, W., Laurel.
McCarty, M. T., Frankfort.
McCarty, W. W., Canaan.
McCaskey, G. W., Ft. Wayne.
McCaslin, Carl N., Earl Park.
McClain, Leslie, Terre Haute.
McClain, Levi M., Scottsburg.
McClain, W. L., Scottsburg.
McClintock, Charles W., Pittsboro.
McClure, J. W., Butlerville.
McClurg, W. H., Kokomo.
McClurkin, J. C., Evansville.
McConnell, J. E., Carlisle.
McConnell, Maud, Indianapolis.
McCool, H. E., Evansville.
McCool, W. E., Evansville.
McCormick, R. S., Nappanee.
McCoy, George T., Columbus.
McCoy, James N., Vincennes.
McCoy, P. Y., Evansville.
McCully, Charles H., Logansport.
McCutchan, J. H., Evansville.
McDonald, A. C., Warsaw.
McDonald, A. J., Bedford.
McDonald, David H., Quincy.
McDonald, J. A., Indianapolis.
McDonald, W. B., New Augusta.
McDowell, James D., Vincennes.
McDowell, L. C., Freelandsville.
McDowell, M. M., Vincennes.
McEvoy, J. B., Ft. Wayne.
McFadden, W. G., Shelbyville.
McFarland, C. C., Abydell.
McFarlin, John T., Williams.
McGaughey, William, Greencastle.
McGowan, J. W., Oakland City.
McGowan, T. J., Vincennes.
McGrew, F. A., Laporte.
McHugh, J. E., Ft. Wayne.
McIlvain, Helen K., Huntington.
McIntire, C. W., New Albany.
McJohnston, W. E., Terre Haute.
McKamy, Anna, New Albany.
McKay, J. D., Marion.
McKeand, Robert, Chelsea.
McKee, C. E., Dublin.
McKee, W. E., Tipton.
McKeenan, R. B., Ft. Wayne.
McKinley, E. D., Atlanta.
McKinney, J. W., Bluffton.
McKittrick, Ora K., Plainville.
McLeay, J. D., Indianapolis.
McMahan, Adah, Lafayette.
McMahan, J. W., Earl Park.
McMillen, W. W. P., Decatur.
McNamara, D. W., South Bend.
McNeal, C. R., Deer Creek.
McOscar, E. J., Ft. Wayne.

McPherson, S. L., Montgomery.
McQuown, O. W., Marion.
McShane, John T., Indianapolis.
McShirley, J. L., Sulphur Springs.
McWilliams, O. E., Anderson.
Maas, Alice M., New Albany.
Macer, Thomas, Evansville.
Mackey, C. W., Portland.
Mackey, R. C., Hobart.
Maddox, W. B. S., Vandalia.
Magenheimer, V. A., Waverley.
Magers, F. M., Churubusco.
Magruder, J. W., Peru.
Mainwaring, W. H., Blomington.
Mallett, C. D., Switz City.
Malpas, S. H., Indianapolis.
Mann, E. B., Muncie.
Manring, N. H., Elwood.
Mansfield, T. J., Royerton.
Mapes, W. L., Terre Haute.
Maple, J. B., Shelburn.
Marchand, V. H., Haubstadt.
Maris, J. J., Paoli.
Markle, G. C., Winchester.
Markley, H. W., Bluffton.
Markley, S. C., Richmond.
Marlatt, C. L., Indianapolis.
Marsh, John L., Brownsburg.
Marshall, D. J., Columbus.
Marshall, Geo. D., Young America.
Marshall, R. E., Elwood.
Martin, A., Bellmore.
Martin, A. A., Ridgeway.
Martin, C. A., Princeton.
Martin, F. A., Commiskey.
Martin, F. V., Michigan City.
Martin, G. F., Corydon.
Martin, H. H., Laporte.
Martin, J. S., Rolling Prairie.
Martin, Paul F., Indianapolis.
Martin, W. H., Kokomo.
Marvel, Charles, Richmond.
Mason, Charles R., Hartford City.
Mason, E. R., Bloomfield.
Mason, George C., Oakland City.
Mason, L., Bluffton.
Mason, Samuel, Pennville.
Masters, Luella M., Thorntown.
Masters, J. L., Indianapolis.
Matheney, T. G., Auburn.
Mathews, Jas., New Paris.
Mathews, W. R., Madison.
Matteson, J. A., Nat. Mil. Home.
Mattison, D. E., Marion.
Mattox, E. L., West Terre Haute.
Mattox, L. L., Geneva.
Mattox, W. R., Terre Haute.
Maughmer, G. C., Kokomo.
Mauk, J. R., Cambridge City.
Mavity, D. E., Fowler.
Maxam, F. H., Princeton.
Maxedon, T. H., Vincennes.
Maxwell, Allison, Indianapolis.
Maxwell, F. R., Martinsville.
May, A., Crothersville.
May, Vance, Washington.
Mayer, Geo. D., Parsons, Kansas.
Mayfield, Marcellus, Royal Center.
Medaris, John W., Brookston.
Medsker, I. T., Indianapolis.
Meek, J. B., Richmond.
Meek, M. L., Abington.
Meinor, J. A., Alexandria.
Mendenhall, E. T., New Castle.
Mendenhall, F. F., Elwood.
Mennett, O. H., Columbus.
Mentzer, S. E., Monroeville.
Mercer, J. D., Poe.
Mercer, O. P., Reelsville.
Merson, U. H., Anderson.
Metcalf, H. P., Andersonville.
Metts, A. H., Ossian.
Metts, Fred, Ossian.
Metts, J. I., Ossian.
Meyer, J. H. William, Laporte.
Meyers, Joseph, Alton.
Michaels, Jos. F., Montgomery.
Miles, James, Merom.
Miley, Isaiah, Anderson.
Miller, Albert, Holton.
Miller, B. E, Albion.
Miller, C. E., Muncie.
Miller, D. L., Goshen.
Miller, George D., Logansport.

Miller, Harry, Nat. Mil. Home.
Miller, H. C., Greentown.
Miller, H. H., Galveston.
Miller, H. M., South Bend.
Miller, James M., Decatur.
Miller, L. C., Alto.
Milligan, Ch. E., Winchester.
Milligan, J. W., Michigan City.
Millis, C. C., Redkey.
Millis, E. D., Plainville.
Mills, Mary, Princeton.
Mills, W. F., South Bend.
Mills, W. H., Boonville.
Minnick, Horace R., Idaville.
Minnick, W. T., Somerset.
Miranda, W. F., Walkerton.
Misener, Walter L., Mechanicsburg.
Mitchell, E. E., Avoca.
Mitchell, F. A., New Albany.
Mitchell, F. L., Everton.
Mitchell, H. F., South Bend.
Mitchell, J. J., Canton.
Mitchell, Josephine M., Lafayette.
Mitchell, W. J., North Vernon.
Mitchell, W. K., Ligonier.
Mitchell, W. P., Gaston.
Mix, C. M., Muncie.
Mobley, Lewis F., Summitville.
Modricker, J. M., Wabash.
Moffitt, Wm., West Lafayette.
Molloy, W. J., Muncie.
Monical, G. S., Martinsville.
Montgomery, H. T., South Bend.
Montgomery, J. R., Owensville.
Montgomery, Martin, Owensville.
Montgomery, S. B., Cynthiana.
Moore, Emma W., Kokomo.
Moore, E. P., South Bend.
Moore, H. A., Indianapolis.
Moore, Maurice G., Vincennes.
Moore, P. B., Owensville.
Moore, P. G., Wabash.
Moore, W. M., New Albany.
Moorhead, T. W., Terre Haute.
Morgan, Elmer E., Ft. Wayne.
Morgan, F. B., Huntington.
Moroney, J. H., Winchester.
Morr, J. W., Albion.
Morris, C. C., Rockville.
Morris, J. E., Liberty.
Morris, J. L., Kings.
Morris, John E., Indianapolis.
Morris, John L., Columbus.
Morris, Thos., Mt. Zion.
Morris, W. F., Ft. Branch.
Morrison, F. A., Indianapolis.
Morrison, John S., Lafayette.
Morrow, Joseph E., Indianapolis.
Morrow, Sarah J., Richmond.
Morse, Gertrude, Madison.
Moss, D. F., Winamac.
Moss, W. C., Winamac.
Moulder, J. McLean, Kokomo.
Mountain, Joseph R., Connersville.
Moyer, F. E., Pennville.
Muelchi, William, Tell City.
Mueller, F. M., Lawrenceburg.
Mullikin, H. M., Terre Haute.
Mullin, H. Y., Rockfield.
Mullinix, P., Cloverdale.
Mumaw, H. A., Elkhart.
Murphy, N. W., Stewartsville.
Murphy, O. C., Scottsburg.
Murphy, R. M., Elkhart.
Murray, D. P., Dunkirk.
Myers, B. D., Bloomington.
Myers, C. L., Covington.
Myers, William H., Ft. Wayne.

Neal, E. M., Edwards.
Neal, W. A., Elkhart.
Neat, T. C., New Albany.
Neeley, J. L., Corydon.
Neff, J. H., Fairbanks.
Nehrbas, J. G., Winona Lake.
Neier, O. C., Indianapolis.
Neighbor, A. G., Fowler.
Nenneker, E. H., Evansville.
Nesbit, William S., Monitor.
Neu, Charles F., Indianapolis.
New, J. N., Barnard.
Newcomber, M. V. B., Tipton.
Newhouse, O. A., Hillside.
Newlin, S. C., Anderson.

Newman, H. M., South Milford.
Newman, M. N., Ossian.
Newton, J. T., St. Bernice.
Niblack, E. S., Terre Haute.
Nichols, John, Atherton.
Nichols, Wm. E., Andrews.
Nierman, H. G., Ft. Wayne.
Nieschang, C. C. F., Ft. Wayne.
Nixon, J. E., Ridgeville.
Nixon, Jno., Farmland.
Noble, T. B., Indianapolis.
Noland, P. D., Kouts.
Norman, J. I., Parkeville.
Norrel, J. R., Richmond.
Norris, S. C., Anderson.
Northrup, A. H., Markle.
Norton, F. D., Columbus, R. F. D.
Norton, William J., Hope.
Null, L. S., New Haven.
Nusbaum, C. E., Bremen.
Nusbaum, J. D., Auburn.
Nussell, Frederick, Brazil.
Nye, J. H., Cromwell.

Oberlin, T. W., Hammond.
O'Brien, B. M., New Winchester.
O'Brien, W. M., Danville.
O'Dell, T. A., Indianapolis.
Oliphant, J. T., Farmersburg.
Oliver, John H., Indianapolis.
Olmsted, R. T., Versailles.
Olney, T. A., South Bend.
O'Neill, Thomas, Anderson.
Orf, George, Indianapolis.
Orr, W. H., Brazil.
Osborn, Harry S., Pittsboro.
Osborn, John A., New Winchester.
Osgood, Howard G., Gosport.
Osterman, A. G., Dudleytown.
Ott, J. E., Ashley.
Otto, A. E., Alexandria.
Outland, Edgar M., Indianapolis.
Overman, C. J., Marion.
Owens, O. W., Muncie.

Paddock, C. A., Portland.
Page, Lafayette, Indianapolis.
Palmer, Adelbert L., Logansport.
Pannenborg, J. C., Hammond.
Pantzer, Hugo O., Indianapolis.
Parker, E. E., Culver.
Parker, E. E., Oxford.
Parker, J. J., Merom.
Parker, O. O., Merom.
Parkison, W. M., Boswell.
Parks, James F., Cumback.
Parr, J. N., Jolletville.
Parrish, J. W., Shelbyville.
Parrish, M. F., Monroe.
Parrish, Rebecca, Logansport.
Parsons, C. H., Rushville.
Pate, J. R., Milan.
Patten, V. C., Morristown.
Patterson, J. W., Fairmount.
Patton, Charles, Terre Haute.
Patton, W. H., Orleans.
Paul, J. O., New Castle.
Paxton, J. T., Glenwood.
Payne, F. M., Princeton.
Payne, J. H., Julietta.
Paynter, L. W., Campbellsburg.
Peacock, S. R., Ladoga.
Peare, R. C., Bellmore.
Pearlman, Samuel, Stone Bluff.
Pearson, J. R., Bedford.
Peck, W. M., South Bend.
Pell, George M., Carbon.
Pendleton, George, Indianapolis.
Perce, B. H., Anderson.
Perkins, O. L., Oolitic.
Perry, Charles, Lewis Creek.
Perry, G. L., Portland.
Peter, E. L., Flora.
Peters, D. C., Greentown.
Peters, J. B., Macy.
Peters, W. H., Lafayette.
Petersdorf, Gustave A., Indianapolis.
Petet, Marshall, Veedersburg.
Petitjean, J. W., St. Wendell.
Pettigrew, D. A., Flat Rock.
Pettijohn, Fred L., Indianapolis.
Pettijohn, Otto B., Indianapolis.
Peyton, David C., Jeffersonville.
Pfaff, John A., Indianapolis.

Pfaff, O. G., Indianapolis.
Pfafflin, Charles A., Indianapolis.
Phares, H. E., Shelbyville.
Phares, J. W., Howell.
Phillips, W. R., Orange.
Phipps, D. L., Whiteland.
Pierce, Harold J., Cloverland.
Pierce, R. J., Richmond.
Pierson, Allen, Spencer.
Pigman, Garrett, Liberty.
Pinkston, J. M., Milan.
Pirtle, G. W., Carlisle.
Ploughe, M. L., Elwood.
Ploughe, M. T., Kempton.
Plummer, I. N., Shoals.
Pohlman, A. G., Bloomington.
Poland, U. G., Muncie.
Pollard, W. S., Evansville.
Porter, George S., Williamsport.
Porter, J. B., Elkhart.
Porter, Miles F., Ft. Wayne.
Post, B. O., Sulphur Springs.
Potter, J. E., Milford.
Potter, Theodore, Indianapolis.
Pounder, Malcolm, Elkhart.
Powell, E. H., Valparaiso.
Powell, E. U., Greentown.
Powell, N. B., Marion.
Pratt, B. W., Goodland.
Preston, A. L., Fairfield.
Preston, H. P., Plymouth.
Preston, J. L., Greencastle.
Price, E. O., Ladoga.
Price, M. D., Nappanee.
Price, W. A., Nappanee.
Pritchett, W. S., Evansville.
Proegler, Carl, Ft. Wayne.
Proudfit, Louis, Osceola.
Puckett, J. L., Kokomo.
Pugh, F. H., Williamsport.
Pulliam, John M., Ft. Wayne.
Purkiser, W. J., Salem.
Putnam, W. E., Whiting.

Quick, Sidney S., Lagrange.
Quick, W. R., Delphi.
Quickel, D. S., Anderson.
Quillen, S. N., Linton.

Radcliffe, F. E., Bourbon.
Ragan, John S., Plainfield.
Ramsbrok, C. R., Huntingburg.
Ramsey, D. C., Mt. Vernon.
Ramsey, J. P., Vincennes.
Randolph, D. F., Waldron.
Ranke, J. H., Ft. Wayne.
Rankin, T. B., Odon.
Rannells, J. Newton, Rochester.
Rarick, J. E., Ft. Wayne.
Rarick, J. E., Wolcottville.
Rariden, Charles E., Bedford.
Ravdin, M., Evansville.
Rawley, Jas. A., Brazil.
Rawlings, C. L., New Harmony.
Rawlings, Sam'l O., New Harmony.
Ray, C. C., Arcadia.
Ray, C. C., Sanford.
Ray, Frank E., Shelbyville.
Rea, C. G., Muncie.
Rea, C. S., Falmouth.
Rea, O. A., Culver.
Read, H. G., Tipton.
Reagan, J. S., Lebanon.
Reagan, R. M., Monon.
Reavis, W. J., Evansville.
Redding, J. L., Bluffton, R. R. 3.
Reed, A. A., Salem.
Reed, J. H., Logansport.
Reed, J. V., Indianapolis.
Reeve, Joseph L., Edwardsport.
Regennas, E. G., Hope.
Renner, M. E., Urbana.
Rennoe, C. A., South Bend.
Reser, William M., Lafayette.
Revis, George F., Lafayette.
Reyer, E. C., Indianapolis.
Reynard, E. G., Union City.
Reynard, G., Union City.
Reynolds, Arthur R., Chicago, Ill.
Reynolds, D. Monroe, Clayton.
Reynolds, Francis M., Montpelier.
Reynolds, G. E., Columbus.

Reynolds, James M., Memphis.
Rhamey, B. W., Ft. Wayne.
Rhodes, E. E., Rochester.
Rice, Jno. T., Attica.
Rice, S. M., Terre Haute.
Richards, J., Fulton.
Richards, Renos H., Patricksburg.
Richards, Samuel D., Patricksburg.
Richards, William R., New Albany.
Richardson, W. H., Vernon.
Richey, Samuel R., Donaldson.
Ridenour, D. C., Peru.
Ridpath, H. W., Indianapolis.
Ried, S. M., Muncie.
Rieman, William H., South Bend.
Rietz, P. C., Evansville.
Riley, J. H. S., Sardinia.
Rine, E. W., Winchester.
Ristine, W. H., Crawfordsville.
Ritter, C. L., Indianapolis.
Ritter, H. O., Orangeville.
Ritter, J. K., Seymour.
Ritter, Mary, Angola.
Ritter, R. H., Indianapolis.
Ritter, T. B., Orleans.
Roark, B. H., Jamestown.
Roark, C. A., Milton.
Robbins, F. L., Carlisle.
Robertson, D. W., Deputy.
Robertson, J. F., Indianapolis.
Robinson, C. C., Indiana Harbor.
Robinson, F. C., Martinsville.
Robinson, F. H., Delphi.
Robinson, G. M., Loogootee.
Robinson, H. C., Martinsville.
Robinson, Michael, Glezen.
Robinson, W. B., Indianapolis.
Robison, J. E., Greetingsville.
Rodgers, A. E., Somerset.
Rogers, A. G., Parker City.
Rogers, H. C., Rockville.
Rogers, J. B., Michigan City.
Rogers, Joseph G., Logansport.
Rogers, O. F., Bloomington.
Rogers, R. C., Bloomington.
Roney, David C., Milan.
Roope, A. P., Columbus.
Root, Wm. W., Parker.
Rose, B. A., Linton.
Rose, B. S., Evansville.
Rosenthal, I. M., Ft. Wayne.
Rosenthal, M. I., Ft. Wayne.
Ross, Alex. A., East Chicago.
Ross, David, Indianapolis.
Ross, George A., Ft. Wayne.
Ross, J. C., Bloomington.
Ross, J. H., Kokomo.
Ross, R. H., Kokomo.
Ross, W. H., Veedersburg.
Rothrock, M. W., Tell City.
Rothschild, Ch., Ft. Wayne.
Row, George S., Indianapolis.
Rowe, A. M., Warsaw.
Rowe, L. M., Indianapolis.
Rowland, George, Covington.
Royer, E. R., North Salem.
Rubsam, Joseph, Logansport.
Rubush, T. R., London.
Ruby, F. Wick, Union City.
Ruddell, I. N., Jeffersonville.
Ruddick, L., Seymour.
Rufert, A. M., Attica.
Ruhl, W. D., Ft. Wayne.
Runcie, G. H., Poseyville.
Runyan, C. P., Elwood.
Rush, M. A., Anderson.
Rutherford, R. S., New Albany.
Rutter, Jno., Cynthiana.
Ryker, Charles, Manville.

Salb, J. P., Jasper.
Samuels, William L., Winnemucca, Nevada
Sanders, I. M., Adams.
Sanders, J. M., Princeton.
Sanders, Joseph, Anderson.
Sandy, W. J., Martinsville.
Sarber, W. C., Argos.
Sarner, J. A., Scottsburg.
Sauer, Frederick W., Indiana Harbor.
Saunders, D. R., North Vernon.
Sawyer, F. M., South Bend.
Schaefer, C. R., Indianapolis.

Schaeffer, Geo. C., Bloomington.
Schell, Walker, Terre Haute.
Scherer, S. P., Indianapolis.
Schilling, Carl, Ft. Wayne.
Schilling, John, Ft. Wayne.
Schillinger, R., Richmond.
Schleiker, A. G., East Chicago.
Schneck, Luella N., Indianapolis.
Schneider, A. L., Ft. Wayne.
Schoen, P. H., New Middletown.
Scholl, C. E., Camden.
Schoonover, William R., Warsaw.
Schreiber, A. H., Lafayette.
Schriefer, E. E., Ferdinand.
Schriefer, J. H., Mosby.
Schrock, H. W., Lagrange.
Schrock, J. J., Emma.
Schrock, O L., Lagrange.
Schrock, Stewart, Lagrange.
Schuck, John H., Chandler.
Schultz, Guy A., Lebanon.
Schultz, W. H., Lebanon.
Schuman, O. V., Columbia City.
Schwarts, C. W., Huntingburg.
Schwartz, W. D., Portland.
Schwartz, W. P., Crown Point.
Schweitzer, J. J., Santa Claus.
Scott, Eueidas K., Hartford City.
Scott, J. B., Terre Haute.
Scott, J. C., Talma.
Scott, John T., Indianapolis.
Scott, J. W. C., Columbia City.
Scott, Noble W., Huntington.
Scott, R. F., Kokomo.
Scott, W. I., Kokomo.
Scudder, Charles P., Washington.
Scull, Eleanor, Hammond.
Seaman, J. B., Osceola.
Seaton, Albert, Nat. Mil. Home.
Seaton, Charles, Martinsville.
Seiberth, Jacob, Julietta.
Selman, John W., Greenfield.
Seneff, J. H., Crystal.
Sensenich, A. S., Wakarusa.
Sensenich, Roscoe, Wakarusa.
Sessions, S. K., Evansville.
Severin, Louis, Bluffton.
Sexton, John C., Rushville.
Seymour, C. A., Wawaka.
Seymour, T. F., Mishawaka.
Shackelford, T. J., Warsaw.
Shacklett, W. B., New Albany.
Shaddy, Elmer D., Saratoga.
Shaddy, John H., Vevay.
Shafer, W. S., Rochester.
Shaffer, A. W., Huntington.
Shaley, F. W., Terre Haute.
Shanklin, E. M., Hammond.
Shanklin, Leslie B., Sullivan.
Shannon, J. B., Greensboro.
Sharp, Harry C., Jeffersonville.
Sharp, Walter N., Indianapolis.
Sharrer, H. E., Hammond.
Sharrer, Wilbur F., Delphi.
Shaw, H. M., Gaston.
Shaw, S. T., Kimmell.
Sheek, D. W., Greenwood.
Sheets, William H., Jeffersonville.
Shellhamer, D. C., Wabash.
Shepherd, G. W., Redkey.
Shepherd, Vincent, Dupont.
Sherwood, B. M., Linton.
Sherwood, E. T., Linton.
Sherwood, W. C., Mitchell.
Shields, J. M., Seymour.
Shields, J. S., Elizaville.
Shipp, Floyd N., Indianapolis.
Shiras, L., Flora.
Shirley, H. W., Shoals.
Shiveley, M. T., Marion.
Shoaf, F. A., Veedersburg.
Shobe, W. A., Ligonier.
Shoemaker, S. A., Poneto.
Shonkwiler, T. M., New Market.
Shook, N. J., Kendallville.
Short, I. W., Elkhart.
Short, John L., Lagrange.
Short, R. B., Bedford.
Short, R. B., Union Mills.
Short, William H., Lagrange.
Shotts, H. R., Nebraska.
Showalter, J. E., Waterloo.
Shrum, Riley, Bedford.
Shull, Charles Q., Montpelier.

Shultz, J. B., Logansport.
Shultz, J. J., Delphi.
Shumaker, W. F., Butler.
Sibley, L. H., Terre Haute.
Sigler, George A., Indianapolis.
Sigmon, E. L., New Albany.
Sigmond, H. W., Crawfordsville.
Simmons, L. A., Kokomo.
Simmons, W. D., Clear Creek.
Sims, I. G., Portland.
Sims, J. N., Dover Hill.
Sims, S. B., Frankfort.
Sipe, J. A., Carthage.
Sipe, R. W., Orange.
Sisson, Ernest R., Maxwell.
Sledd, S. D., Ft. Wayne.
Sloan, John N., Spencer.
Sloan, W. W., French Lick.
Slocum, Stewart, Fortville.
Slonaker, C. L., Leitersford.
Sluss, J. W., Indianapolis.
Smadel, Joseph W., Vincennes.
Smelzer, S. G., Shirley.
Smick, C. M., Terre Haute.
Smith, A. F., Wawpecong.
Smith, C. H., Lebanon.
Smith, C. W., Selma.
Smith, DeLaskie, Lebanon.
Smith, G. C., Poseyville.
Smith, George F., Weisburg.
Smith, Geo. H., Knightstown.
Smith, Guy A., Ft. Wayne.
Smith, I. F., Arlington.
Smith, Jacob F., Brazil.
Smith, J. W., Vevay.
Smith, Mrs. L. F. J., Wabash.
Smith, L. W., Liberty Center.
Smith, L. W., Wabash.
Smith, Martha J., Indianapolis.
Smith, M. S., Laporte.
Smith, R. H., Kokomo.
Smith, S. E., Richmond.
Smith, S. W., Leesville.
Smith, Thomas G., Brownsburg.
Smith, Thurston, Bloomington.
Smith, W. A., Otterbein.
Smith, W. C., Rushville.
Smith, W. H., Bedford.
Smith, W. H., Rushville.
Smoot, D. Brooks, Washington.
Snapp, J. A., Goshen.
Snider, J. W., Fairland.
Snyder, B. F., Camden.
Snyder, E. R., Troy.
Solt, W. J., San Pierre.
Somers, Joseph L., Vincennes.
Sommer, E. F., Indianapolis.
Sourwine, John D., Brazil.
Sowder, Charles R., Indianapolis.
Sparks, Joseph T., Yeddo.
Spaulding, L. A., Bluffton.
Spear, A. H., Spencer.
Spencer, M. J., Indianapolis.
Spencer, William A., Wolcott.
Spickermon, H. R., Muncie.
Spigler, O. R., Terre Haute.
Spillman, F. J., Connersville.
Spink, Mary A., Indianapolis.
Spink, T. F., Washington.
Spink, Urbana, Indianapolis.
Spinning, A. L., Covington.
Spitler, Charles E., Saratoga.
Spohn, G. W., Elkhart.
Spooner, Jared, Peru.
Spoor, John, Brooklyn.
Spradley, N. M., Tennyson.
Springston, C. E.. Selvin.
Sprowl, John S., Warren.
Spurgeon, Cornelius, Kossuth.
Spurgeon, O. E., Muncie.
Spurgeon, W. A., Muncie.
Staley, L. B., Bicknell.
Staley, Thomas M., Bicknell.
Stalker, Bodine, Borden.
Stallings, F. L., Caborn.
Stark, H. W., Holland.
Stark, J. W., Evansville.
Starr, W. L., New Albany.
Stauffer, Edwin R., Hammond.
Stauffer, W. A., Elkhart.
Steincamp, E. F., Haysville.
Stemen, C. B., Ft. Wayne.
Stemen, G. B., Ft. Wayne.
Stemen, W. E., Ft. Wayne.

Stemm, W. H., North Vernon.
Stephenson, T. J., Lapel.
Sterne, Albert E., Indianapolis.
Stevens, B. C., Logansport.
Stevens, H. C., Star City.
Stevens, R. C., Plymouth.
Stevenson, D. W., Richmond.
Stewart, Clark B., Vincennes.
Stewart, C. S., Auburn.
Stewart, Jonas, Anderson.
Stewart, J. W., Logansport.
Stewart, O. H., Orleans.
Stillson, Jos. O., Indianapolis.
Stinson, A. E., Athens.
Stipp, F. E., Bedford.
Stockton, Sarah, Indianapolis.
Stockwell, John, Charlestown.
Stoddard, J. M., Anderson.
Stoler, A. E., Wabash.
Stoltz, Charles, South Bend.
Stone, Chas. E., Windom.
Storch, L. A. E., Indianapolis.
Stormount, R. M., Stewartsville.
Stotlemyer, C. I., Hagerstown.
Stout, Ch. M., Middletown.
Stout, O. L., Upland.
Stout, O. M., Stanford.
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Stucky, Frederick V., Gosport.
Stucky, John M., Gosport.
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Sturdivant, J. D., Noblesville.
Sturdivant, M. G., Chestnut Hill.
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Summers, O. R., Middletown.
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Sutherland, O. L., Laporte.
Sutherland, P. N., Angola.
Sutton, H. H., Aurora.
Suverkrup, Lotta R. A., Columbus.
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Swarts, Willard W., Auburn.
Sweeney, I. F., Milton.
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Sweet, Otis, Martinsville.
Swezey, Harry, Marion.
Swope, A. A., Crawfordsville.

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Tallman, H. H., La Paz.
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Taylor, D. B., Nat. Mil. Home.
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Taylor, James H., Indianapolis.
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Taylor, U. T., Newburg.
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Teagarden, J. A., Indiana Harbor.
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Tebault, W. P., New Albany.
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Tepe, G. W., Evansville.
Terflinger, T. W., Logansport.
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Thomas, P. B., Decatur.
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Thralls, R. T., Hymera.
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Tourner, J. P., Bloomington.
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Trook, E. M., Marion.
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Trueblood, I. W., Monroe City.
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Welch, O. F., Westport.
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White, G. W., Mitchell.
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White, R. P., Ft. Wayne.
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Williams, W. H., Lebanon.
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Willien, M. F., Terre Haute.
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Wilson, J. P., Blocher.
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Wilson, Ralph, Shirley.
Wilson, R. J., Salem.
Wilson, R. S., Berne.
Wilson, T. W., New Harmony.
Wilson, W., Yankeetown.
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Wilton, I., Evansville.
Wiltshire, J. W., Bloomington.
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Winstandley, W. C., New Albany.
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Wishard, E. E., Noblesville.
Wishard, W. N., Indianapolis.
Wisner, W. E., Columbus.
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Wolfe, F. E., Lanesville.
Wolfe, J. P., Newmarket.
Wolfe, Z. C., Corydon.
Wolferman, A. G., Indianapolis.
Wollenmann, A. G., Ferdinand.
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Wood, J. M., Greensburg.
Wood, N. S., Anderson.
Wood, T. F., Angola.
Wood, W. F., Mishawaka.
Wood, W. W., Angola.
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Woollen, H. M., Indianapolis.
Woollen, L. J., Vevay.
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Worsham, L., Evansville.
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Wright, Ervin, Huntington.
Wright, Jacob E., Cambridge City.
Wright, J. W., Kokomo.
Wright, M. R., Knox.
Wright, Thomas, Boonville.
Wright, William M., Indianapolis.

Wrork, J. H., Shelburn.
Wyatt, A. R., Lagrange.
Wyburn, D. C., Sheldon.
Wyeth, Chas., Terre Haute.
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Yager, E. J., Graysville.
Yarling, J. E., Peru.
Yencer, M. W., Boston.
Yenne, C. H., Washington.
Yocum, Boaz, Coal City.
Yocum, M. G., Mentone.
Yoder, A. C., Goshen.
Young, Franklin, Richmond.
Young, G. M., Evansville.
Young, J. B., Cicero.
Young, J. B., Indianapolis.
Young, M. H., Harmony.
Young, S. J., Terre Haute.
Young, S. J., Valparaiso.
Youngblood, E. L., Boonville.
Youngkin, J. W., Wolcottville.
Yung, Rudolph, Terre Haute.

Zaring, C. T., Greencastle.
Ziliak, A. L., Francisco.
Ziliak, J. E., Haubstadt.
Zimmerman, J., Lynnville.
Zinn, Ch. A., Michigantown.
Zinn, G. E., Elkhart.
Zinninger, Henry A., Lucerne.
Zuerner, Joseph, Jeffersonville.

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Andrew, George L., Chicago.
Anthony, J. R., Indianapolis.
Avery, Jno. P., Indianapolis.
Bare, John W., Salem.
Bell, William H., Logansport.
Brooke, Jared E., Plymouth.
Burrage, S., W. Lafayette.
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Chittenden, G. F., Anderson.
Cisna, W. R., Chicago.
Comingor, J. A., Indianapolis.
Compton, J. W., Evansville.
Coulter, Stanley, Lafayette.
Darling, N. S., Laporte.
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Field, M. H., Indianapolis.
Fletcher, W. B., Indianapolis.
Florer, T. W., Texas.
Furniss, H. W., Bahia, Brazil.
Gould, Vernon, Rochester.
Hacker, T. S., Indianapolis.
Jameson, P. H., Indianapolis.
Jeffries, W. E., Indianapolis.
Kautz, Jno., Wabash.
Kelley, F. H., New Harmony.
Kern, L., Kokomo.
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Lake, George B., Wolcottville.
Lewis, E. R., Washington, D. C.
McNab, P., Indianapolis.
Miller, Harry, N. M. Home, Marion.
Mitchell, Harvey, Muncie.
Moore, J. W., Mexico.
Moore, S. H., Indianapolis.
Mulhausen, M., Evansville.
Munsey, D. O., Gaston.
Murray, A. L., Eaton.
Oatley, John H., New Philadelphia.
Parker, M. G., Danville.
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Pate, J. R., Milan.
Patterson, A. W., Indianapolis.
Powell, J. Z., Logansport.
Ralston, W. G., Evansville.
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Ryan, W. B., Indianapolis.
Schuyler, P. L., Evansville.
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Stone, R. F., Indianapolis.
Walker, E., Delphi.
Walling, Willoughby, Chicago.
Waterman, L. D., Indianapolis.
Watkins, F. H., Peru.
Wiseman, Sumner, Culver.
Wishard, W. H., Indianapolis.

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